

Health Status of Minorities and Low-Income Groups

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Public Health Service
Health Resources Administration
Office of Health Resources Opportunity



Health Status of Minorities and Low-Income Groups

*This book belongs to
Gordon Hatcher
and his friends*

Prepared by:

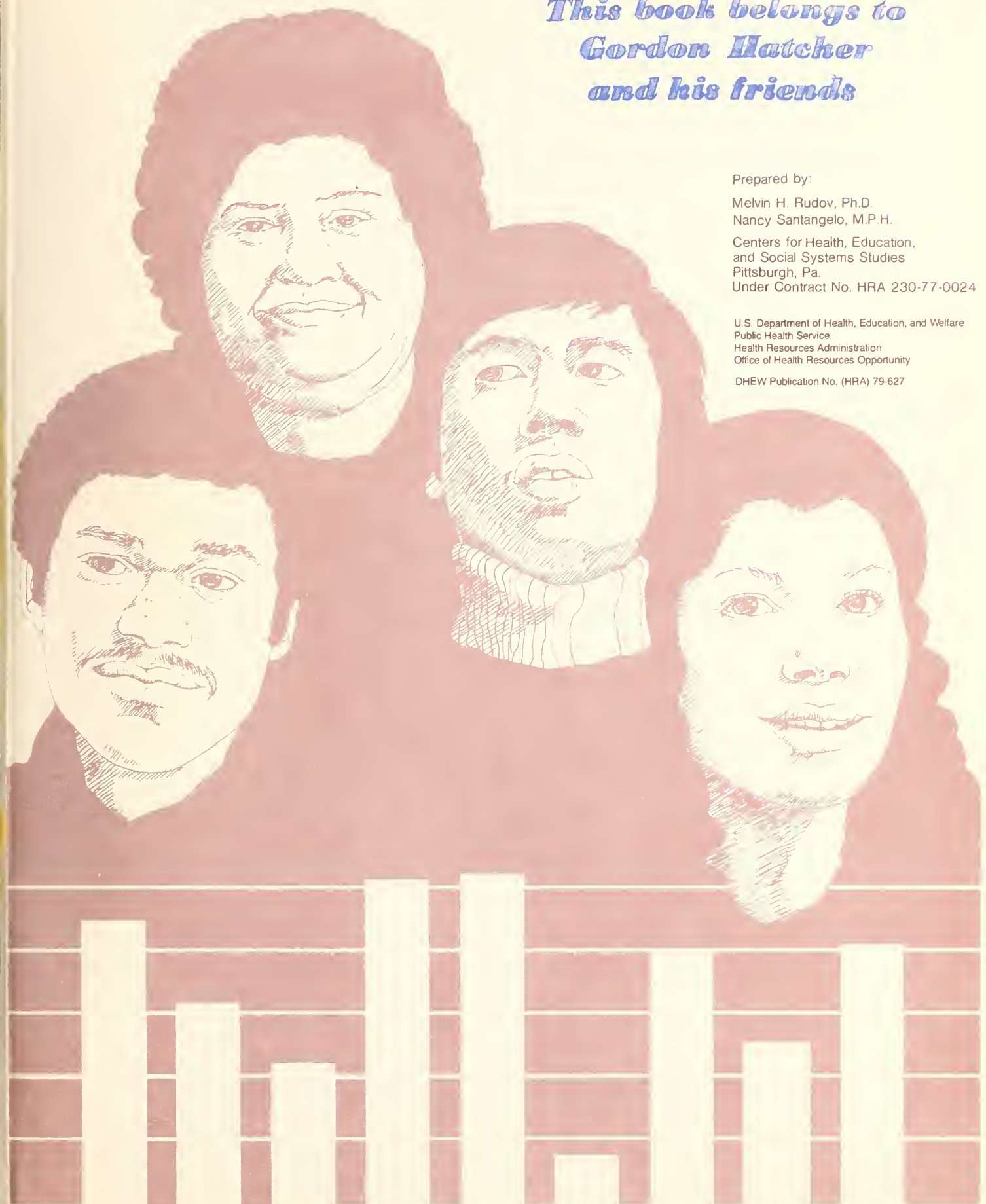
Melvin H. Rudov, Ph.D.
Nancy Santangelo, M.P.H.

Centers for Health, Education,
and Social Systems Studies
Pittsburgh, Pa.

Under Contract No. HRA 230-77-0024

U.S. Department of Health, Education, and Welfare
Public Health Service
Health Resources Administration
Office of Health Resources Opportunity

DHEW Publication No. (HRA) 79-627



Health Resources Administration

Henry A. Foley, Ph.D.,
Administrator

Office of Health Resources Opportunity

Clay E. Simpson, Jr., Ph.D.
Associate Administration for
Health Resources Opportunity Programs

William Robinson, M.D.
Deputy Director

Division of Analysis and Evaluation

Kinzo Yamamoto, Ph.D.
Director

Division of Program Coordination

Arthur Testoff
Director

Foreword

The mission of the Health Resources Administration (HRA) is to identify and address current and anticipated imbalances, inefficiencies, and deficiencies in the distribution, supply, utilization, and costs of health care resources and services for the Nation. The Office of Health Resources Opportunity (OHRO), within HRA, specifically focuses upon these matters and their impact upon the disadvantaged.

This HRA report is designed specifically to keep the public informed of health conditions and resources in the Nation, and is the culmination of the efforts of many individuals. I should like, however, to extend a special word of thanks to Dr. Clay Simpson, Associate Administrator for Health Resources Opportunity, HRA, and his staff in OHRO for providing the focus for this effort.



Henry A. Foley, Ph.D.
Administrator
Health Resources
Administration

Table of Contents

I. Executive Summary	3
II. Introduction	15
III. Vital Statistics	29
IV. Reproductive and Genetic Health	55
V. Acute Disease Conditions	79
VI. Chronic Disease Conditions	97
VII. Accidents and Injuries	143
VIII. Mental Health	161
IX. Dental Health	185
X. Preventive Health	205
XI. Utilization of Health Services	227
XII. Financial Expenditures for Health Services	255

Acknowledgments

The project resulting in this volume was initiated while the authors were on the staff of the Center for Health System Studies of the American Institute for Research. Later that Center established itself as an independent research organization under the name of the Centers for Health, Education and Social Systems Studies, and the work on the manuscript was completed under a separate contract from OHRO to that successor organization.

The need for this work was originally identified by Arthur Testoff, Chief, Research and Evaluation Branch of the Office of Health Resources Opportunity (OHRO), DHEW, and the authors would like to thank him for having faith in our abilities to perform the required analyses and for giving the project its initial direction. Dr. Tony Hausner, of the Staff of OHRO, was project monitor for our effort and gave the project substantial guidance.

Ms. Sharon Counts worked on the project in its early phases. She was responsible for gathering substantial amounts of resource information and cataloging it by chapter content areas. Finally, we would like to acknowledge the assistance from The Center for Health Systems Studies (CHSS) clerical staff who prepared the manuscript for the printer.

Chapter I

Executive Summary

Contents

A. Introduction	5
B. Vital Statistics: A First Look at Health Status	5
C. Reproductive and Genetic Health	6
D. Acute Disease Conditions	7
E. Chronic Disease Conditions	8
F. Accidents and Injuries	9
G. Mental Health	9
H. Dental Health	10
I. Preventive Health	11
J. Utilization of Health Services	11
K. Financial Expenditures for Health Services	12
References	14

Chapter I

Executive Summary

One characteristic of the disadvantaged is their lack of some of the privileges of life, as defined by prevailing standards. These privileges include "access to health, wholesomeness and all those services that promote a healthy way of living" (1). Throughout history, the under-privileged classes have been limited to inferior health services at best, while the privileged have had access to a higher quality health care. The differences have been noticeable in terms of mortality and morbidity.

Public attention was drawn to the plight of the disadvantaged in the early 1960's by claims that poverty did exist in this wealthy country, but that it was hidden or ignored. The War on Poverty was an expression of the realization and concern by the Nation that poverty did, indeed, exist and had to be eradicated.

Having been an incidental part of more general social or financial relief programs for the poor, health care became an important part of the programs for equality of economic opportunity in the War on Poverty. The rationale was that since poor health was an obstacle to economic opportunity, the health status of the poor, together with other poverty-producing factors, had to be improved. In the effort to provide the poor segments of the population with better and more equal access to health care, the supply and distribution of services were improved, and the Medicare and Medicaid programs were developed and implemented. What has been the effect of these programmatic efforts? Has there been a change in the health status of this Nation's various disadvantaged groups? Which programs have been most effective in bringing about change? In what areas are new programs and continued effort re-

quired? These are some of the evaluative and analytic questions that the effort has raised.

The Office of Health Resources Opportunity (OHRO) has as its function the initiation and conduct of programs which promote equity in access to manpower programs and health services for all segments of the population. In addition, OHRO frequently acts as a source of information to other governmental agencies, as well as the Congress, on what programs are necessary to achieve such equivalence.

As such, OHRO has a constant need for sources of data which demonstrate what disparities exist between the disadvantaged and advantaged segments of our society, as well as information on the effectiveness of programs aimed at reducing these discrepancies. To this end, in May 1977, OHRO awarded a contract to the Center for Health Systems Studies (CHSS) to compile this reference work on the health status of the disadvantaged.

It is impossible to anticipate all the uses to which a large pool of data, such as that compiled in this report, may be put. Each of the segments of the government which must make decisions on policy issues, conceptualize programmatic intervention programs, and evaluate those programmatic efforts must have some data, of the sort compiled here, to refer to from time to time to carry out their missions. There are many people outside of government who are also involved in the delivery of health care services or in the analysis, evaluation, and research into the health care system. These people, also, may at one time or another, benefit from data of this sort. The Center for Health Systems Studies (CHSS) staff, in keeping all these potential uses in mind, has tried to pre-

pare a document which can be used by a diverse audience and for an extremely diverse set of purposes.

Data, however, are very difficult to use in a raw form. Sociodemographic data can mean a wide variety of things, and health system data are difficult to interpret without a comprehensive understanding of all the factors which can contribute to the outcome of any particular data aggregation. Because of these vagaries, the Center for Health Systems Studies (CHSS) has attempted, both through the selection of the data presented and through textual interpretations of those data, to present some insight into the factors that may be causing the data to appear as they do.

In generating this report, many data sources, described more fully in the next chapter, were tapped to collect what we believe to be the best aggregation of information extant in dealing with this problem area. The data have been ascribed to a series of specific aspects of health status and used analytically to treat each of these problem areas. Short of initiating a special major data gathering effort directed specially at disadvantaged peoples, the overviews of these problem areas are based on the best compendium of data available and are, we fervently hope, analyzed to bring out the essence of their meaning in terms of the evaluative and analytic questions raised above.

Vital Statistics: A First Look at Health Status

Comparisons of major vital statistics of the disadvantaged with the rest of the population revealed several important differences. The birth rate of the total U.S. population has been declining in recent years, but at a much faster rate among the white

population than among racial minorities. The birth rate of racial minorities was one and a half times that of whites in 1975, and it was higher than that experienced by whites as long ago as 1940.

Mortality rates in the 70's began an accelerated decline after 20 years of only modest gains. Although the overall mortality rates of racial minorities have declined considerably over time, their overall mortality is still one third greater than that of whites. Higher deaths rates were also observed among lower income groups and the less educated. Unfavorable racial differentials in mortality were observed for all major causes of death, with the exception of deaths from suicide and arteriosclerosis. The largest relative racial differentials occurred for early infancy mortality, diabetes mellitus, and cirrhosis of the liver.

Life expectancy comparisons among racial, socioeconomic, and education groups displayed similar patterns to mortality rates as would be expected. Although greater gains in longevity were experienced by racial minorities, their predicted length of life in 1975 was over 5 years shorter than that of whites.

Infant mortality in the U.S., among both whites and racial minorities, compares unfavorably with that of several other countries. While improvements in infant mortality have occurred among both whites and nonwhites, the nonwhite rate of decrease was lower than that of whites until only recently. Racial minorities have almost twice the infant mortality of whites, the differential is greater for Black Americans than American Indians, the latter having experienced greater gains than the former. A complex of interrelated biological, environmental, behavioral, and genetic factors are related to infant mortality. The frequency of almost all risk factors is higher in the nonwhite population. Although the racial differential from this cause of death has lessened somewhat, it is still substantial, and if present rates of decline among both racial groups is maintained, the racial

differential will remain substantial for some time to come.

The maternal mortality experience of racial minorities is even worse than their infant mortality experience. Nonwhites have over three times the maternal mortality of whites, and this differential has not been reduced significantly in the past 25 years. Greater improvements in maternal mortality were observed among American Indians than among all racial minorities combined, but they, too, have a rate almost one and one quarter the rate of whites.

Marriage and divorce rates of racial minorities, also, differ from those of the rest of the population. A smaller percent of the nonwhite population were married in 1975. The percent of women married has been decreasing for both racial groups, but larger decreases occurred among nonwhite women in the last 15 years. The rate of divorce has increased in all race sex groups, but the proportion of divorced persons is greatest for racial minority females.

Reproductive and Genetic Health

For as long as data have been available, nonwhites have had higher birth rates than whites. They have, also, had a higher share of maternity-related and other reproductive health problems.

Teenage pregnancy and out of wedlock births are associated with health problems which have increased over the past decade and have negatively affected maternal and child health among whites, as well as nonwhites. With respect to teenage birth rates, the nonwhite rate has, however, been approximately twice as high as the white race. This differential may change in the future, however, since the birth rate for white girls aged 14 and 15 increased between 1970 and 1974, whereas the opposite was true for the nonwhite girls of the same ages. Out of wedlock birth rates for both whites and nonwhites also rose before 1965; but since then, the nonwhites have experienced a decline in out of wedlock births while the white ratio has continued to rise. The result has

been a narrowing of the racial disparity from 1965 to 1975. The increase in out of wedlock births among whites has been especially great in the 15-19 age group.

While low birth weight increased as a problem for nonwhites between 1950 and 1968, it remained steady for whites during the same period. Only since 1968 did the ratio of nonwhite underweight infants begin to decline. The white ratio, also, decreased however, resulting in a larger racial/ethnic disparity in 1975 than in 1968.

Reductions in other maternity-related health problems during the past few decades have reflected improvements in the maternal and child health status of white, as well as nonwhite, women. Rates in maternal mortality and infant mortality have declined considerably since the 1930's. Although the racial/ethnic disparities in maternal and infant mortality narrowed over the years, nonwhites still have a three times as high maternal death rate and a twice as high infant mortality rate as whites. With both measures, the minorities are one generation behind the rest of the population.

Another indicator of maternal health which also shows large differences between minority and non-minority women is the utilization of prenatal care. In 1973, more than three times as many white women as black women who gave birth had received prenatal care. White women were, also, more likely than nonwhite women to begin their prenatal visits during the first trimester of their pregnancy.

Over a long period of time, black women have been less likely than white women to have abortions induced. Liberalization of abortion laws and changes in attitudes toward abortion have led to increased number of black women seeking abortions. Although the abortion ratio has increased for white women as well, it has not changed proportionately as much as it has for nonwhites. In 1975, nonwhite women had almost 200 more abortions than white women per 1000 live births.

Birth control has also become more commonly practiced among blacks since the 60's. Not only has the proportion of blacks using any contraception increased, there has, also, been a rise in the use of the most effective birth control methods. In 1973, it was more common for whites than for blacks to use the less effective devices, but blacks were more likely than whites to use no contraceptives at all. The growing use of contraception among blacks does not appear to be reflected in their visits to family planning clinics; however, their proportion of patients at Planned Parenthood clinics has declined in recent years. Unless these clinics do not constitute a majority of family planning clinics throughout the country, no explanation of this finding can be found.

No data since 1970 on incidence of venereal disease among whites and nonwhites are available. Figures from that year showed sizable racial differences with the white segment of the population having lower rates.

Local data from Allegheny County, Pennsylvania, from 1976 pointed to similar racial disparities.

Mental retardation is associated with maternal and child health, primarily, because of its relationship to nutrition and prematurity. This association is demonstrated by the higher prevalence of mental retardation—particularly mild retardation—in the low-income segment of the population, where inadequate maternal nutrition and prematurity are relatively common health problems.

With respect to racial/ethnic differences in prevalence of genetic disorders, some of the most common inherited diseases are linked to specific racial/ethnic groups. Sickle cell anemia affects primarily blacks, while cystic fibrosis occurs mostly among whites. Tay-Sacks is limited to Jews of eastern European origin; thalassemia has a relatively high incidence among people from the Mediterranean countries; and Phenylketonuria (PKU) is more prevalent among people of European des-

cent than among black and eastern European Jews.

Acute Disease Conditions

The analyses to determine whether the health status of the disadvantaged differs greatly from the health status of the advantaged, with respect to acute disease conditions, resulted in a diffuse picture. A national study shows an increase in the incidence of acute illness with income, while a local study showed the reverse. When the national study findings are disaggregated by race and sex, inversions occur again: the highest incidence of acute conditions is reported among the highest income whites and among the lowest income racial minority groups. Among racial minorities the highest incidence is reported by the highest income males and the lowest income females.

A greater number of whites seek health care for acute conditions through private physician office visits than do racial minorities. On the other hand, racial minorities seek health care for their acute conditions in greater numbers through hospital outpatient visits. It is well known that the disadvantaged, usually, use hospital emergency rooms and outpatient departments for the types of ambulatory care for which the advantaged, usually, use private physician office visits. The data do not allow complete analyses, but it could well be that the only difference between the advantaged and the disadvantaged is the locale of treatment. That is, the visit rate for health care for acute conditions, irrespective of treatment source, may be the same for both groups. Inpatient hospital utilization for acute conditions has been greater for whites than for racial minorities over the years. Since utilization is increasing much more rapidly among racial minorities than among whites, the differences between the groups are lessening rapidly.

The only surgical procedure analyzed was appendectomies. Again, there has been a disparity between whites and racial minorities with a greater appendectomy rate being experienced by whites. A large increase in the rate of

appendectomies for racial minorities has occurred, resulting in a smaller, although still substantial, difference in rates between the two groups. Since there did not appear to be a large decline in the death rate, due to acute appendicitis among the disadvantaged, it could be that this change merely reflects an increase in the rate of unnecessary surgery among the disadvantaged that the advantaged had previously been subjected.

Mortality rates were analyzed for the two most frequent categories of acute conditions causing death: cirrhosis of the liver and influenza and pneumonia. Influenza and pneumonia death rates of nonwhites have decreased at a faster rate than death rates of whites, indicating that while the health status of the disadvantaged has been much worse as far as these two conditions have been concerned, the gap has been narrowing drastically. If death rates for nonwhites continue to decline in the next decade as they did in the last decade, the difference in rates among these groups will be considerably smaller.

An entirely different picture is demonstrated by cirrhosis, however, where the trend has been for other indicators of health status to be improving for the nation at large, but at a faster rate for disadvantaged persons. With cirrhosis, the trend has been just the reverse. The nation at large seems to be having an increasing incidence of death due to cirrhosis, with racial minorities experiencing much more rapid growths with this health problem. In 1960, the non-white death rate for this condition was lower than that of the total population. By the late 1950's, racial minorities, as a group, started to pass the whites and now have death rates almost twice that of the white group.

In summary, for most acute conditions, it appears that access to ambulatory health care may be the same for advantaged and disadvantaged groups, and that previous disparities for inpatient care are lessening. It also appears that disparities between incidence rates in these groups, previously

indicating a poorer health status among the disadvantaged, are lessening and that the differences have become substantially smaller for some conditions.

Chronic Disease Conditions

With respect to the leading chronic diseases, the health status of the disadvantaged was found to be inferior to that of the rest of the population, for the most part. Among the five leading chronic disease causes of death in 1975 (heart disease, cancer, stroke, diabetes, and arteriosclerosis), the age-adjusted death rates of the disadvantaged were higher than those of the rest of the population for four of the five causes: heart disease, cancer, stroke, and diabetes.

Diseases of the heart were the leading cause of death in 1975, accounting for 38 percent of all deaths. The white population in the United States had a lower age-adjusted death rate from heart disease in 1975 (217.2 deaths per 100,000 population) compared to all other races (245.2). The racial differential of heart disease mortality, however, has decreased slightly over time.

Cancer, the second leading cause of death in 1975, accounted for 20 percent of all deaths in the United States in that year. The age-adjusted cancer death rate for the total U.S. Population increased 4 percent between 1950 and 1975. For the white population, the increase was 3 percent during this period, but for non-whites the increase was 20 percent. Most of the cancer increase among nonwhites was experienced by males. Cancer of the lung, prostate, and colon/rectum are the cancer sites with both the highest incidence and mortality. Males of races other than white experienced far greater increases in death rates from these causes than whites between 1950 and 1973. For example, the lung cancer death rate of nonwhite males was 25 percent lower than that of white males in 1950, but it was 21 percent higher in 1973. A closer scrutiny of these trends, which take into account additional years rather than two points in time only; and a more

thorough analysis of the etiology of these types of cancer, might suggest what part of the increase in cancer rates among non-whites is due to 1) a differential in access to or in quality of health care, 2) a differential change in personal habits, and/or 3) changes in occupational exposure to carcinogens.

Although the incidence of breast cancer is higher at higher socioeconomic levels, the death rates from this cause are similar for white females and all other females. The death rate of nonwhite females from this cause is catching up with that of white females. In 1973 the death rate for breast cancer among nonwhite females was only 6 percent lower than that of white females. However, the nonwhite rate had been 17 percent lower than the white rate in 1950. The incidence rate of cervical cancer among white and all other females decreased between 1947 and 1969. The decrease was greater for white women, however, increasing the racial differential. In 1947 the cervical cancer incidence rate was 94 percent higher among nonwhite females compared with white females; but in 1969, it was 124 percent higher.

Nonwhites not only have a higher prevalence rate of diabetes, the racial differential has also increased since 1965. More nonwhites per population see physicians for this condition than do whites, and relatively more whites are hospitalized for this condition. A substantially higher death rate from this condition is experienced by nonwhites compared with whites. The death rate from diabetes is highest among nonwhite females, being over twice that of white females. Income has a greater impact than race on death rates from this cause. While the racial differential in the prevalence of diabetes was 1.20, the income differential was 3.49.

Nonwhites report having lower prevalence rates for almost all of the 15 leading chronic respiratory conditions (excluding tuberculosis). Tuberculosis morbidity is excessive among nonwhites. Nonwhites have roughly five times the tuberculosis incidence of

whites. The differential is even greater when Indian and Alaska Native tuberculosis incidence is compared with whites. The racial mortality differential varies considerably from year to year, but it does not appear to be narrowing. Since deaths from this cause are relatively few in number, rates should be combined over years in order to determine definitely whether or not a change in the differential has occurred.

Prevalence rates of other selected chronic conditions are experienced differentially by the two racial groups as well as among income groups. Among persons 17 to 44 years of age, nonwhites have a *lower* prevalence of asthma, chronic bronchitis, impairments of the spine, hearing impairments, and vision impairments. On the other hand, non-whites aged 17 to 44 years have a *higher* prevalence of arthritis, diabetes, and hypertension. For all of these chronic conditions, the prevalence rates of low income persons are higher than those of high income persons. The greatest income differential rates exist for hypertension, hearing impairments, and diabetes.

Among persons 45 to 64 years of age, nonwhites reported a higher prevalence of arthritis, asthma, diabetes, heart conditions, hypertension, impairments of the spine, and vision impairments, and lower rates of chronic bronchitis, hernia (abdominal), ulcer, and hearing impairments. Again, among persons aged 45 to 64, a higher prevalence of all of the above chronic conditions was found among low income persons than among high income persons.

Nonwhites report lower rates of limitation (all degrees) of activity due to chronic conditions, but more severe limitations than do whites. Differences in activity limitation, due to chronic disease, are greater among income groups than between racial groups. Low income persons have roughly three times the activity limitation of high income persons.

Accidents and Injuries

In this section, the occurrence of in-

juries, due to accidents of the disadvantaged, are compared to their occurrence in the remainder of the population. The frequency and rate of injuries due to accidents, as well as resulting disability and mortality, are discussed. Available data on accidents and resulting injury associated with disadvantagedness are limited. Those important differences that emerged from the data that are available, however, are noted in the following analysis.

In a comparison of injury rates due to accidents for the white and nonwhite populations, a lower rate of personal injury (191.1 per 1000 population) was found among nonwhites when compared to the rate of personal injury among the white population (261.6 per 1000 population). The rate of injuries occurring in the home is, also, lower for nonwhites compared to whites, while little racial difference is seen in the rates of injuries due to motor vehicle and work accidents. The lower injury rates observed among the disadvantaged could be attributable to the following:

- 1) Only injuries which require medical attention are included, which may exclude more injuries among the disadvantaged who, in general, for a number of reasons, are low utilizers of the health care system when compared with the advantaged; and

- 2) any differences in interpretation of what constitutes an injury, i.e., the disadvantaged may only report injuries of a very serious nature.

In measuring the impact of injury due to accidents, the reliability of the data available is, also, limited for several reasons. The first is the criterion mentioned earlier of medical attendance for classifying injury. The second is the varied interpretation of restriction in daily activities by the different population groups. In addition, the restriction of daily activities, or bed disability, may vary depending on the nature of a person's work or other usual daily activities. Salient findings from studies of disability due to injury are described below.

Low income persons had over twice the number of days of restricted activity per 100 persons compared with high income persons. Restricted activity days were inversely related to education. That is, the higher the educational level, the lower the number of reported restricted activity days. Number of bed disability days per 100 persons varied among income groups. Low income persons had over three times the number of bed disability days per 100 persons as high income persons. Days lost from work per 100 employed persons followed the same pattern as bed disability days when income and education groups were compared.

The accident mortality rate for the nonwhite population was 32 percent higher than that of the white population. In comparing the mortality statistics by type of accidents, the rate of mortality due to motor vehicle, and due to all "other" classes of accidents, was also higher in the nonwhite population when compared with the white population.

In summary, from the available data, it appears that disparities exist between the disadvantaged populations relative to injuries due to accidents. While the *rate of injury* appears to be lower among nonwhites and low income persons compared with whites and high income persons, the *impact* of injuries, as measured both by various degrees of activity restriction and by mortality, is greater for nonwhites and low income persons than it is for whites and high income persons. The impact on life style resulting from any economic loss incurred, as a result of injury due to accidents among the disadvantaged, warrants further investigation.

Mental Health

Although there are some objections to the medical model for conceptualizing mental health problems, it appears to be the only reasonable means for analyzing this problem area at this time. There are many limitations to mental health problems. Institution-based utilization rates appear to be the only recourse at this time, and the po-

tential differences between these data and actual prevalence are obvious.

Patient care episodes have increased fourfold during the last two decades. During this time, there has been a shift towards outpatient utilization and away from county and state hospital utilization. Federally subsidized Community Mental Health Centers (CHMCs) have been responsible for a good measure of the increased utilization and shifts in setting, as have mental health services of community-based acute general hospitals. This period, also, witnessed decreases in average length of stay at inpatient facilities. One study was available for comparing local data with national norms in a community where the register includes most ambulatory care from private practitioners. This study makes it appear that, in at least that one community, episode rates per base population are constant for the middle and upper income brackets, but are increasing for the lower income brackets.

There appears to be major sex and racial variations in the types of facilities used. Males and nonwhites use public facilities in greater proportions than do females and whites. The meaning of this variation is not fully clear.

Blacks use CMHCs in almost twice their proportion of the general population; their rates on the rural (population density) variable approximating their distribution in the general population. Rural usage of CMHCs is less than urban usage for all racial/ethnic groups, presumably reflecting either a lesser stress of life condition, a lesser acceptance of such type of treatment, a lesser acceptance of the use of public facilities for such problems, or lesser access to such services.

For Native Americans, the period between 1967 and 1972 saw mental disorders jump from ninth to sixth place in hospital admissions, while the number of patient days more than doubled. The increased utilization probably represents changes in the attitudes of the Indian and Alaskan Natives

toward mental health problems, rather than any increase in the incidences of such problems. Alcoholism, alcoholic psychoses and drug dependency was the major category of these hospitalizations (although they were almost all alcohol related) with deaths from alcoholism among these peoples ranging from 4.3 to 5.5 times national rates.

While Spanish Americans constitute approximately 4.5 percent of the nation, their utilization of state and county hospitals accounted for only 3 percent of all admissions. There is reason to believe that their utilization rate may reflect their acceptance of this type of health service, however, rather than the prevalence of mental health problems for which other groups utilize such facilities. One indication that this might be the case is that the underutilization is much less by the large age range of people who are neither young or very old.

Spanish American mental patients are less educated than nonwhites and other white mental patients, and like nonwhites had a higher proportion of involuntary commitments than did other whites. Schizophrenia was the leading diagnosis for Spanish American state and county mental hospital admissions. Their admissions for alcoholism were lower than those for either the other whites or the nonwhites, while their admission rate for drug disorders was slightly higher than these comparison groups. Males outnumbered females in admissions by a significant amount and in a consistent fashion.

Federally funded drug abuse centers make up a very large proportion of all of the drug abuse treatment in the country. A well-controlled data base on the usage of those facilities indicates that utilization rates are quite high for Blacks and Mexican-Americans, while American Indians and Cubans use those facilities proportional to their numbers in the overall population and Whites, Puerto Ricans and Asians are underrepresented in their use. Blacks seem to start abusing heroin at a later age and go for a

longer period of time before seeking treatment. Utilization for Blacks and Spanish Americans seems to be on the rise and is mostly related to heroin abuse. Rates for all groups associated with marihuana seem to be on a downward trend, while utilization rates associated with barbiturates and amphetamines are constant.

Dental Health

A comparison of the dental health status of advantaged and disadvantaged groups leads to less clear-cut conclusions than are possible with other health problems. In some ways, it appears that the disadvantaged have a lesser health status than the advantaged, and in some ways it appears that the reverse is true, at least for blacks.

Four different measures of health status were analyzed: (a) utilization of dental health services; (b) dental caries; (c) periodontal disease; and (d) missing teeth. All four of these measures indicated that there was a poor dental health status among those of lower income, those of lower formal educational levels, and those residing in rural areas. They varied in their indication of whether or not those in the racial minorities had poorer or better dental health status. All four measures, also, indicated that the disparities are lessening.

Many studies have been conducted on dental health services utilization since 1930. In the last 45 year period, the rates of persons having at least one dental visit the preceding year rose from approximately 30 percent to approximately 60 percent. All of the studies that included these demographic variables showed that utilization rates were substantially higher among whites, women, the higher income groups, the more highly educated, those living in the more densely populated areas, and those in the Northeast and Far West.

Utilization rates of nonwhites have changed rapidly in the last two decades. Two decades ago, white utilization rates were twice the nonwhite rates. The gap narrowed to 1.5 times the nonwhite rate by 1969. If

that rate of increased usage had continued, the gap would have been almost eliminated by 1980. In tracing the disparity between age groups, it became obvious that those who started utilizing dental services at an early age continued to do so as they advanced in age, slowly wiping out the age group disparities. It is probably, also, the case that if the persons in the disadvantaged groups started utilizing dental services at an early age, the disparities between their dental utilization rates and those of the advantaged groups would, also, diminish. Since we have no age-within-racial group breakdown of utilization rates, there is no way of knowing whether that is the means by which the disparity has, indeed, been diminished, and thus whether that diminution is likely to continue.

The PHS Health Examination Survey used actual dentists' examinations of teeth rather than self-reports as data. This should have made the data more accurate than other extant health status data. But the dentists had constraints on their procedures, disallowing the use of dental X-rays or other than superficial examination of teeth. We can expect, of course, their observations of fillings and missing teeth to be very accurate. Their measurements of dental caries, however, may have been in error. Given this caveat, the data clearly show that as family income and as educational level increase, the mean number of decayed teeth decreases, the number of filled teeth increases radically, and the number of missing teeth first increases and then decreases. As for race, Blacks have higher decay rates, particularly among women; lower missing teeth rate, and substantially lower filled teeth rates. Caution is suggested in interpreting the composite Decayed, Missing and Filled (DMF) rates reported since almost all of the composite score differences are attributable to filled teeth.

According to a 1962 survey, as income and education increased, the incidence of periodontal disease was much higher among males than among females.

Black females had consistently higher rates at all income and educational levels; black males had almost identical rates to white males at all educational levels, but much higher rates at the highest income level.

Judgments by examining dentists as to the need for dental care, and thus the oral health status of the U.S. population, decreased as income and educational levels increased. Nonwhites were judged to require dental care at rates more than 50 percent above whites.

Preventive Health

In this section, the preventive health practices of the disadvantaged are compared with those of the rest of the population. For purposes of this analysis, two areas of preventive health are included. First, data pertaining to preventive medical care, including routine physical examinations, special purpose preventive medical examinations, and preventive pregnancy care are discussed. Second, nonmedical personal habits that impact on health are included.

How one perceives the state of one's health bears some relation to any health actions taken on a curative or preventive basis. A far greater proportion of whites (50 percent) compared with racial minorities (36 percent) assessed their health as excellent. Combining both excellent and good assessments of health, 88 percent of whites compared with 82 percent of racial minorities made this assessment. A positive relationship exists between income and the likelihood of assessing one's health as excellent. Only 32 percent of the lowest income persons compared to 65 percent of the highest income persons rated their health as excellent.

Race, education, and income are determinants of pregnancy care. In 1973, 59 percent of whites compared with 45 percent of nonwhites visited a physician during the first trimester of pregnancy. A small proportion of low income persons and less educated persons visited a physician in the first trimester compared with high income

and more educated persons. Whites and nonwhites had postnatal checkups with roughly the same frequency.

However, higher proportions of high income and more educated women reported having had a postnatal checkup than their income and education counterparts.

Income and education are greater factors than race in determining whether or not an individual had a general checkup and several other preventive examinations. Almost twice the proportion of high income, compared with low income persons, and almost three times the proportion of more educated compared with less educated persons had general checkups during the year. Among children under 17 years of age who had a routine examination, racial differences are small, while income and residence difference are larger. A larger proportion of high income persons, persons who reside in metropolitan areas, and in the Northeast part of the nation had a routine physical examination compared with the rest of the population. Income differentials are, also, greater than racial differentials for: 1) eye examinations, 2) pap smears, 3) breast examinations, 4) electrocardiograms, and 5) glaucoma tests. The income differential is smaller than the racial differential for chest X-Rays.

In the past 10 years, the immunization level for polio has been declining by between 10 and almost 30 percent, depending on the age and racial group. Among whites 1 to 4 years of age, the rate declined from 77 percent in 1965 to 67 percent in 1974. But among nonwhites 15 to 19 years of age, the rate declined from 82 percent in 1965 to 49 percent in 1974. The immunization levels for polio, as well as for measles, rubella, and diphtheria-typhoid-pertussis are lower among nonwhites than they are among whites. The largest racial differential was observed for polio.

In the area of nutrition, racial differentials are greater than income differentials. Blacks have a higher prevalence rate of deficiencies of

vitamins D, C, and A, iodine, calcium, and iron than do whites. Blacks, however, have lower prevalence rates for protein and niacin deficiencies. Blacks, also, have higher rates of multiple nutrition deficiencies than do whites.

The belief is growing among health professionals that behavior modification and health education may be more influential in improving health status than additional medical care. The smoking, diet, and drinking habits of the disadvantaged were compared to those of the rest of the population. Considering these three behavioral patterns, which are believed to have the greatest impact on health, the disadvantaged do not, in general, appear to be worse than the advantaged. Only in the area of obesity, and only among black females, are the groups of interest at a disadvantage with regard to these lifestyle measures.

Utilization of Health Services

In this section the health care utilization patterns of the disadvantaged are compared with those of the rest of the population. Both national and local data are used in this analysis. Medical care utilization is categorized in terms of the following modes of medical care: (1) ambulatory care, (2) inpatient care on a short-term basis, (3) inpatient care on a long-term basis, (4) home care, and (5) telephone contacts.

To summarize, the utilization pattern of nonwhites and low income persons compared with whites and higher income persons are:

1) a smaller proportion of nonwhites and low income persons see a physician during the year;

2) the average number of physician visits a year is lower among nonwhites *but* higher among low income persons;

3) outpatient department utilization is greater among nonwhites and low income persons;

4) short stay non-federal hospitalization rates are lower among nonwhites *but* higher among low income persons;

5) length of stay is longer for both nonwhites and low income persons;

6) the surgical procedure rate of nonwhites is lower but the surgical procedure rate of low income persons is higher;

7) fewer nonwhites and low income persons report to a physician as a regular source of care (more report to clinics as regular source);

8) a larger proportion of nonwhites and low income persons report no regular source of care;

9) nonwhites are underrepresented in nursing homes and institutions for the mentally retarded and overrepresented in institutions for the mentally ill; and

10) both telephone contacts and physician house calls are made with greater frequency to white households and to high income households than to nonwhite and to low income households.

Utilization of health care services is related to and influenced by at least three factors. First, a relationship exists between utilization and health needs and health status. In general, the greater the health needs of a population the greater the utilization of the medical care system. In a study which compared health needs with utilization, investigators found that moderately larger proportions of racial minorities and low income persons seen by physicians have serious medical problems, as compared with whites and with higher income persons. Another health needs indicator, the use disability ratio, is a measure of the use of health services relative to the need for those health services. This ratio was found to be lower among low income persons and among nonwhites than among high income persons and among whites, suggesting lower utilization relative to need by low income persons and nonwhites. These studies indicate that lower utilization of health services by the disadvantaged is not explained by fewer health needs.

A second factor which is related to health service utilization is access.

That is, any person or group or persons who are characterized as having those qualities that prevent or make entry into the medical care system more difficult will use the system less frequently. Two common barriers to health care, waiting time and traveling time, were both found to be longer for nonwhites and for low income persons than for the rest of the population.

A third factor which is related to health service utilization is the attitude of an individual toward his health and toward the health care system. Social researchers have observed attitudes among the poor which appear to result in: (1) failure to regard symptoms as health problems, and (2) failure to obtain available health services.

Financial Expenditures for Health Services

In this section, health care expenditures of the disadvantaged are compared with those of the rest of the population. Personal health care expenditures in the United States reached \$552 per person in 1976. While racial and income breakdowns are not available for 1976, they are available for 1970 when estimated personal health care expenditures were \$248 per person. In that year, the mean health care expenditures of racial minorities were 37 percent lower than those of whites, \$162 compared with \$258. Conversely, mean health expenditures of low income persons were 16 percent *higher* than those of higher income persons. The lowest health care expenditures were observed among these three groups of persons: 1) nonwhites, 2) rural children with family incomes of less than \$6000, and 3) middle income (\$6000-\$10,999) persons under age 65 in central cities.

The fourfold increase in per capita personal health care expenditures from 1950 to 1970 was accompanied by an expansion in health insurance coverage in the United States. Hospital insurance coverage reached 77 percent of the population in 1970, compared with only 57 percent in 1953. Uninsured persons when com-

pared with the total population had disproportionate percentages of persons: 1) age 17 years and under, 2) below the poverty level, and 3) from families in which the head of household had completed 8 years or less of education.

Out-of-pocket expenses as a *proportion of the total health expenditures* and as a *proportion of total personal income* is a measure of the financial impact of health care expenditures on individuals. Out-of-pocket expenses in 1970 represented 40 percent of all *health care expenditures*. This proportion varied as a function of family income from 32 percent for families with less than \$2000 income to 56 percent for families with incomes of \$15,000 and over. In contrast, health care expenditures, as a *proportion of total income*, was 3.5 percent for the highest income group compared with 12.6 percent for the lowest.

Several government programs were designed with the purpose of reducing financial barriers to health care, especially those financial barriers experienced by the disadvantaged. Analysis of available data and findings of other studies were used to ascertain the effectiveness of these programs in this chapter. A comparison of Medicare payments showed that racial minorities received lower and fewer Medicare reimbursements for physician services in 1972. Medicare inpatient hospital care reimbursements per persons with a hospital episode, on the other hand, were higher for racial minorities than for whites, probably reflecting the lengthier hospital stays of non-whites when compared to whites.

Medicare outpatient hospital care reimbursements per person enrolled and per person served were higher for racial minorities than for whites. In addition to racial disparities, income disparities were observed among Medicare enrollees. Medicare reimbursements per enrollee were twice the amount for the highest income group as they were for the lowest income group.

Disparities unfavorable to the disadvantaged were, also, observed in the Medicaid program. Medicaid payments to whites are 74 percent higher than payments to racial minorities. On the average, utilization of various types of Medicaid funded services is 10 percent higher for whites compared with racial minorities, except for nursing home and intermediate care, where the utilization rate of whites is 4-1/2 to 5-1/2 times that of racial minorities.

Disparate expenditures for health care of another population group deserve mention. While the population under age 19 represented 33 percent of the population in 1976, only 15 percent of the total personal health care expenditures was spent on this age group. Public funds were used to pay for 68 percent of total health expenditures for persons under age 19. While a large part of the age differential in spending reflects a lesser need for health care among the young, an argument can be made for increased public health spending for this age group, in view of a significant payoff in terms of both improved health and those cost savings associated with early care and prevention.

In summary, what can be said about the preceding analyses? The data presented in many cases are questionable in validity and meaning and at times inconsistent with other data presented. In many cases, trend data are not

available making status measurements and status comparisons, at best, tentative. Also, in many cases, missing data make it impossible to interpret some of the differences found, or to analyze some major questions that revolve around major issues. In spite of these shortcomings, however, we feel that the massive amounts of data and their accompanying analyses still allow some major conclusions to be drawn. Those that we have chosen to enunciate at this time are:

- a. Over the majority of the health status measures analyzed, there is a clear picture that persons disadvantaged by virtue of their income, educational level, age, residence, and membership in racial/minority groups, are characterized by lower levels of health status than are the advantaged.
- b. Across a number of the health status indices for which trend data are available, there is strong evidence that the differences between the advantaged and the disadvantaged have been lessening. In several instances, it appears that large racial differences are likely to disappear within 10 to 20 years, *if the present rates of change continue*. These are trends in which the rates of decrease are high among the disadvantaged. The rates among the disadvan-

tagged are approaching those of the advantaged, and when they do, it is assumed they will also level off. That is, the trend lines will not cross.

- c. There are a number of health status measures that do not appear to be experiencing a closing of this gap, and some for which the gap seems to be widening. Additional, or novel, efforts will be required to bring about an equivalence of health status for the health problems on which these metrics are based.
- d. Many of the health problems of the disadvantaged that do not appear to be improving, or are not improving at a sufficient rate, or not at the same rate as for the advantaged segment of our population, are ones that will not improve without a change in the life styles of the disadvantaged peoples. In some, but not all cases, the life style changes will only come about when there are, also, changes in the socio-economic bases of their existence.
- e. If there is a desire to continue to monitor and analyze the health status of the disadvantaged, some additional data, controls, and data aggregations will be necessary from the various data mechanisms involved.

Reference

1. John Kosa, The Nature of Poverty. In *Poverty and Health, A Sociological Analysis*. John Kosa and Irving Kenneth Zola (Editors). Revised edition. Harvard University Press, Cambridge, Massachusetts, 1975.

Chapter II

Introduction

Contents

A. Purpose	17
B. Methodology and Sources	17
C. Definitional Problems	19
1. Disadvantaged	19
a. Income	19
b. Educational Level	20
c. Population Density	20
d. Age	22
e. Racial/Ethnic Minorities	22
D. Interpretational Problems	23
1. Interaction Between Independent Variables	23
2. Concept of the "Disadvantaged"	23
3. Health Status and its Measurement	24
4. Data Biases	24
References	28
List of Tables	28
List of Figures	28

Chapter II

Introduction

A. Purpose

The office of Health Resources Opportunity (OHRO) has as its function the initiation and conduct of those programs necessary to assure that health manpower and health services offered throughout these United States are equitable for all segments of the population. In addition, OHRO frequently acts as a source of information to other governmental agencies, as well as the Congress, on what programs are necessary to achieve such equivalence. As such, OHRO has a constant need for sources of data which demonstrate what disparities exist between the disadvantaged and advantaged segments of our society, as well as information on the effectiveness of programs aimed at reducing those discrepancies. To this end, in May 1977, OHRO awarded a contract to the Center for Health Systems Studies (CHSS) to compile this reference work on the health status of the disadvantaged.

It is impossible to anticipate all the uses to which a large pool of data, such as that compiled in this report, may be utilized. Each of the segments of the government which must make decisions on policy issues, conceptualize programmatic intervention programs, and evaluate those programmatic efforts, must have some data of the sort compiled here to refer to from time to time to carry out their missions. There are many people outside of government who are, also, involved in the delivery of health care services or in the analysis, evaluation, and research into the health care system. These people may at one time or another benefit from data of this sort. The CHSS staff, in keeping all these potential uses in mind, have tried to prepare a document which can be used by a diverse audience and for an ex-

tremely diverse set of purposes.

Data, however, are very difficult to use in raw forms. Sociodemographic data can mean a wide variety of things, and health system data are difficult to interpret without a comprehensive understanding of all the factors which can contribute to the outcome of any particular data aggregation. Because of these vagaries, the CHSS staff have attempted, both through the selection of the data presented and through textual interpretations of those data, to present some insight into what factors may be responsible for any observed relationships and differences between comparison groups (causing the data to appear as they do). These interpretations are particularly necessary because they go beyond the scope of this report to present the methodologies employed in generating the many data sources cited herein. For the sophisticated readers who wish to impart their own interpretation to the data, this source book is meant to act as an initial reference work. That is, it presents data on certain subjects and provides references to the original sources. It is suggested that before these data are used for important programmatic decisions, the original data sources be reviewed so that the methodologies employed can be taken into account.

B. Methodology and Sources

Two previous works commissioned by OHRO were made available to us by that Office. The first of these was a report entitled "An Analysis of the Health Status of the Disadvantaged" and was prepared by Albert Kondo, M.S., M.P.H., in November of 1975. The second work was "Health of the Disadvantaged Chartbook" prepared by Dr. Tony Hausner in the fall of 1976. These documents were used to

prepare an outline of the present report, with additional topics being added as their need became obvious. The CHSS library was culled for documents containing information on each of the topics in the outline, and extensive searches were, also, conducted in the National Library of Medicine, the Libraries of the Graduate School of Public Health, and the School of Medicine at the University of Pittsburgh. The publication branches of the Health Resources Administration, the Health Services Administration, and the Social Security Administration were also culled for references on the general topics, and the topics from which the specific topics were derived. Discussions were held with knowledgeable individuals concerning the additional contents of various data banks including the National Center for Health Statistics, the Social Security Administration, the Center for Disease Control, and NEISS. There were insufficient funds and insufficient time to have special data runs made on any of these data banks. This remains as one of the major sources of expansion of the information contained in this report. In addition, letters soliciting information were sent to each of the organizations listed below.

1. Professional Societies

A. Medical

American Board of Colon and Rectal Surgery
American Board of Preventive Medicine
American Board of Dermatology
American Board of Internal Medicine
American Board of Neurological Surgery
American Board of Obstetrics and Gynecology
American Board of Ophthalmology

- American Board of Orthopedic Surgery
 - American Board of Otolaryngology
 - American Board of Pathology
 - American Board of Pediatrics
 - American Board of Medicine & Rehabilitation
 - American Board of Plastic Surgery
 - American Board of Psychiatry and Neurology
 - American Board of Radiology
 - American Board of Surgery
 - American Board of Thoracic Surgery
 - American Board of Urology
 - Federation of State Medical Boards of the United States
 - American Medical Association
 - American Board of Family Practice
 - American Academy of Family Physicians
 - American Academy of Occupational Medicine
 - B. Other Health Professions
 - American Nurses Association
 - American Medical Record Association
 - American Dietetics Association
 - American Speech and Hearing Association
 - Medical Library Association
 - National Association of Social Workers
2. Health, Educational and Hospital Associations
- Allergy Foundation of America
 - American Academy of Physicians' Assistants
 - American Academy of Optometry
 - American Association of Bioanalysts
 - American Association for Comprehensive Health Planning
 - American Association for Respiratory Therapy
 - American Cancer Society
 - American College Health Association
 - American Diabetes Association
 - American Foundation for the Blind
 - American Fund for Dental Health
 - American Home Economics Association
 - American Hospital Association
 - American Lung Association
 - American Medical International, Inc.
 - American Medical Student Association
 - American Medical Women's Association
 - American National Red Cross
 - American Occupational Therapy Association
 - American Optometric Association
 - American Pharmaceutical Association
 - American Physical Therapy Association
 - American Podiatry Association
 - American Public Health Association, Inc.
 - American Social Health Association
 - American Society for Medical Technology
 - American Society of Allied Health Professions
 - Arthritis Foundation
 - Association of Medical Rehabilitation Directors and Coordinators, Inc.
 - Association of Schools and Colleges of Optometry
 - Association of Schools of Public Health
 - Blue Cross Association
 - Committee to Combat Huntington's Disease, Inc.
 - Cystic Fibrosis Foundation
 - Epilepsy Foundation of America
 - Equitable Life Assurance Society of the United States
 - Eye-Bank Association of America, Inc.
 - Goodwill Industries of America, Inc.
 - International Society for Clinical Laboratory Technology
 - Muscular Dystrophy Association, Inc.
 - National Association for Music Therapy, Inc.
 - National Association of Community Health Centers, Inc.
 - National Association of Home Health Agencies
 - National Council on the Aging
 - National Easter Seal Society for Crippled Children and Adults
 - National Foundation-March of Dimes
 - National Urban League
 - Smith Kline & French Laboratories
 - Society for Public Health Education
 - United Way of America
 - United Way in Pittsburgh
 - Bureau of Health Statistics and Analysis New York City
 - Department of Health
 - National Association for Retarded Children
 - Health Care Delivery Systems
 - Medical Care & Research Foundation
 - New York State Department of Health
 - Dade County Health Department
 - Texas State Health Department
 - California State Health Department
 - City and County of San Francisco Health Department
3. Insurance Companies
- California Life Corporation
 - Transamerica Corporation
 - Founder's Life Insurance Company
 - Beneficial Standard Life Insurance Company
 - Firemans Fund American Life Insurance
 - Pennsylvania Life Insurance Company
 - United American Life Insurance Company
 - Aetna Life and Casualty Company
 - Travelers Corporation
 - Government Employees Life Insurance
 - George Washington Life Insurance
 - Pacific Guardian Life Insurance
 - Globe Life Insurance Company, Incorporated
 - Montgomery Ward Life Insurance Company
 - North American Life Insurance Company
 - Pan American Life Insurance
 - American Health Life Insurance
 - State Mutual Life Assurance Company of America
 - Federal Life and Casualty Company
 - North American Life and Casualty
 - Northwestern National Life Insurance
 - North Central Life Insurance Company
 - Standard Life Insurance Company
 - Continental General Insurance Company

Mutual of Omaha Insurance
Company
Security Mutual Life Insurance,
New York
Executive Life Insurance Company
of New York
American Life Insurance Company
of New York
Greater New York Mutual
Insurance Company
Guardian Life Insurance Company
of America
U.S. Fire Insurance
Group Hospital Service
Ina Corporation
Southwestern General Life
Insurance Company
United Pacific Insurance Company
General Life Insurance Company
of Wisconsin
Manhattan Life Insurance
Company
Columbia Mutual Life Insurance
Company
Prudential Insurance Company of
America
Equitable Life Insurance Company
Metropolitan Life Insurance
Company
Prudential Insurance Company of
America

Although most of these organizations do collect data of some sort, most of them did not have health status data disaggregated by any of the socio-demographic variables that could serve as proxies for disadvantagedness. Some few of these organizations did have some data, however, that were not found in other works. Those data, of course, have been included in the following chapters, where appropriate. As the data came in, they were organized by topic with cross references being made to the other topics to which these data were related or were tangential.

C. Definitional Problems

There are a number of terms with which the CHSS staff has had to deal that have varying definitions depending on the usage. In this section both the difficulties in defining some of the more important of these terms, as well as stating the definitions employed throughout the report, will be ex-

plored. Also, since the definitions are partially predicated on available data disaggregations, the basic data for the Nation on each of the cross tabulational variables is also presented. These data can be used for interpreting other data throughout the report that uses similar breakdowns of health status measures.

1. Disadvantaged—Although there exists within our populace a series of groups that are disadvantaged in a way that deserves our national attention, the concept of “the disadvantaged” is itself quite vague. One of the reasons that it is vague is that the groups comprising this cluster are quite different from one another in quite a few respects, including in which ways they are disadvantaged and why they are disadvantaged. It is totally unnecessary for us to go through a long sociological treatise of who is disadvantaged and why they are disadvantaged. The important thing is that most of the data which are available to describe health status have been collected in a fashion that disallows disaggregation by social disadvantagedness. To be very pragmatic, it makes more sense for us to adopt definitions which can be supported by the data which are available. Generally, we have been able to find five cross-tabulational variables which have been used in the analyses presented in this book. These variables are income, education, sex, population density (in a very few cases geographical location), age, and membership in a racial/ethnic minority group. Not present in all data sets, each variable presented certain difficulties with its definition, as well as an interpretation of its effect on the health status measurements of concern. In addition, differential age distributions within income levels, as well as differential distributions of both age and income within racial groups, act as confounding variables in comparisons between both income groups and racial groups. Some of these difficulties are explored in the paragraphs below:

a. *Income*—We live in a socioeconomic reality which re-

quires people to purchase health care services. At our lower income levels, persons are living at and below subsistence levels which leave them without resources for purchasing health care services. The Medicaid program, in operation now for almost a decade, was initiated to provide some subsidies for these services to the people in the lower income brackets. This program has not eradicated medical indigency, however, since some medical services are not covered. Also, the family income requirements for participation in that program are such that a large number of people needing some subsidy cannot be beneficiaries of the program.

Table 1 contains the distribution of families by income for 1973-74, using the income categories commonly found in health status data. The categories used break family income into five groups, with the median occurring roughly in the center of the middle group. From these data, it can be seen that the distributions between metropolitan and non-metropolitan areas are dissimilar, with the non-metropolitan areas having higher proportions of their population in the lower incomes brackets. Figure 1 contains some breakouts of the poverty population as defined by the U.S. Department of Commerce. From this tabulation, it can be seen that the elements of the population that are most clustered below poverty levels are the elderly, *those* classed as *unrelated individuals*, and consistently across all subcategories, those living in non-metropolitan areas.

One bias in these data comes from those who are in a transient low-income state. Those desiring employment, but are temporarily unemployed, is one component of this bias source and students

comprise another component. Since neither of these groups necessarily share medical indigency conditions with others in their income bracket, some distortion of the data results.

- b. *Educational Level*—Although the lore of our country is replete with Horatio Alger stories, it is true that there is a reasonably strong correlation between educational attainment and advantagedness. Some of the advantagedness, in this case, is composed of three elements: one being the income to purchase better health care services, the second being a knowledge of which services to purchase, and the third being knowledgeable of how to use the services offered by the health care delivery system.

Figure 2 contains a distribution of the Nation's adult population by educational attainment. A large component of the 12 percent of the population that have not completed at least an eighth grade education consists of the elderly for whom such education was not common, and for whom education and income were not necessarily correlated during their earlier life. Nevertheless, the immigrant and uneducated components of this stratum of the population are sufficiently high to render the health status data of this subgroup noticeably poorer than that of the more highly educated groups. Even though as a Nation we rank highly in terms of the levels of educational attainment achieved by our populace, there remains a distinct difference in the health status of the various levels of education.

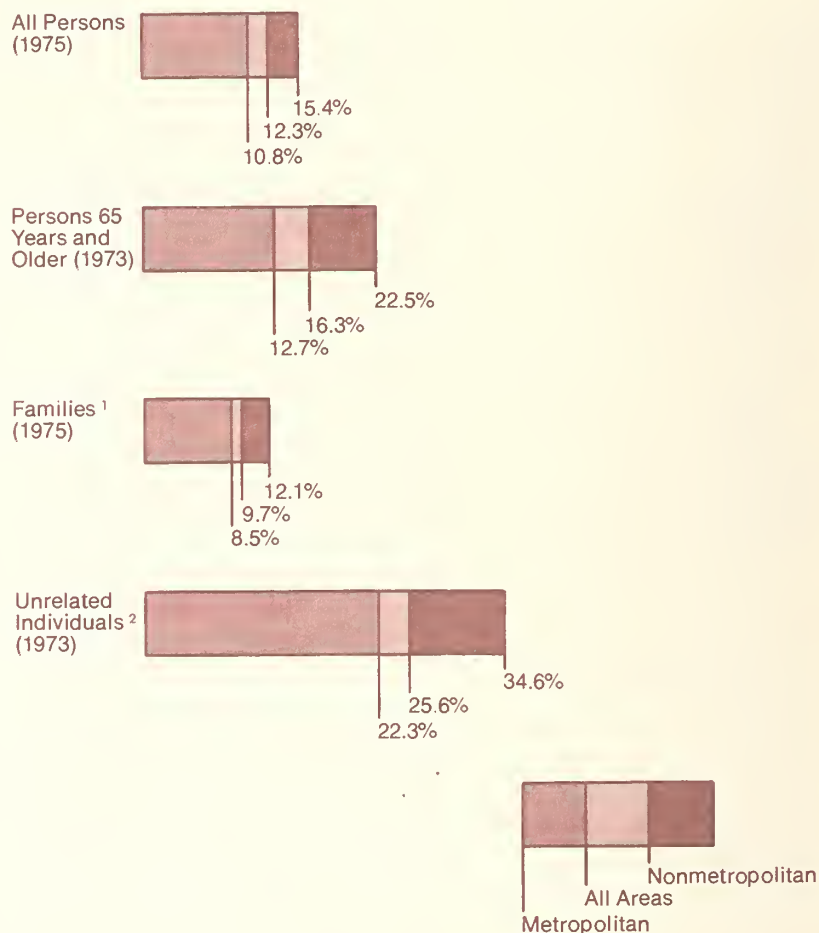
- c. *Population density*—Whenever anyone has raised the issue of insufficient health care resources, they are almost always faced with a report that our country has sufficient resources, but they are poorly dispersed geographically. Health care personnel and

Poverty Level

Percent of Population Below the Poverty Level,* 1973 and 1975

Figure 1.

Population



* A family is a group of two or more persons related by blood, marriage, or adoption and residing together.
 * Unrelated individuals are persons 14 years of age or older (other than inmates of institutions) who are not living with any relatives.

* The Federal Government annually readjusts the poverty threshold, taking into account factors including family size, age and sex of family head, and place of residence. In 1975 the poverty level was set at \$5,500 for a nonfarm family of four. 1973 is the most recent year for which poverty level data on unrelated individuals and on persons 65 years and older is available broken down by metropolitan/nonmetropolitan residence.

Source: "Comparative Statistics on Health Facilities and Population—Metropolitan and Nonmetropolitan Areas," American Hospital Association, 1977.

health care facilities are concentrated in those areas with the greatest population densities. This places some people at a disadvantage who, sufficient in income and educational level, happen to reside in an area of limited resources.

The problems in dealing with the definitions of population density have been aptly described in an American Hospital Association

publication, and they are quoted below to avoid unnecessary redrafting.

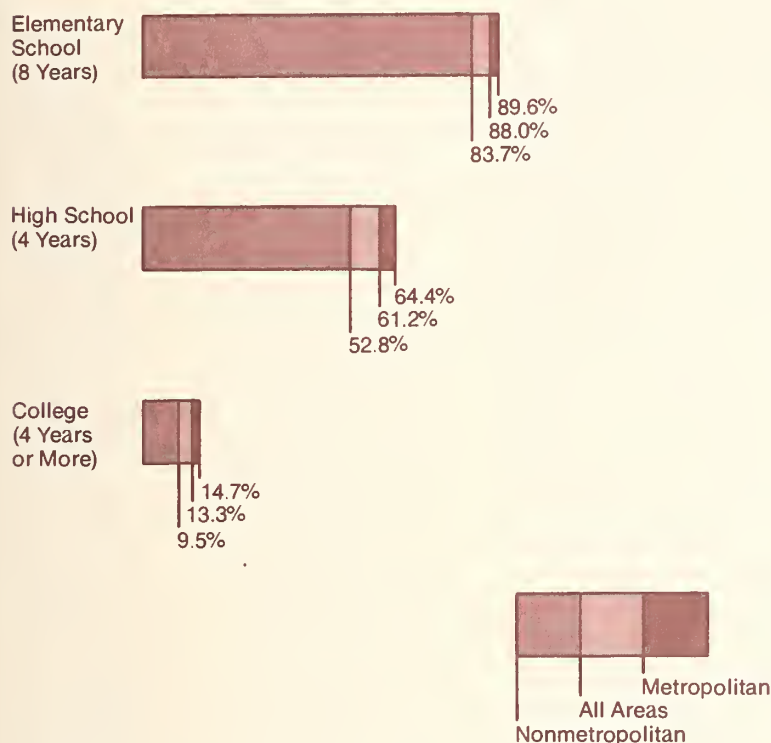
"It is difficult to draw a precise line separating metropolitan and non-metropolitan regions, inasmuch as metropolitan areas can be defined, not only by the number of residents, but also by the density of population and the proximity, accessibility, and even urban character of the

Years of School Completed

Percent of Population 25 Years Old and Over by Years of School Completed, 1974*

Figure 2.

Years of School



*Recalculated to include as metropolitan the population on counties designated as metropolitan since 1970
 Source: "Comparative Statistics on Health Facilities and Population—Metropolitan and Nonmetropolitan Areas," American Hospital Association, 1977.

facilities. The U.S. Bureau of the Census employs three different classification methods for describing the distribution of the population: metropolitan-nonmetropolitan, urban-rural, and farm-nonfarm. The development and usage of these terms are discussed below. Metropolitan-nonmetropolitan is the classification most frequently used in the tables.

Metropolitan-Nonmetropolitan

This classification is based on the definition of Standard Metropolitan Statistical Areas (SMSAs) adopted by the U.S. Office of Management and Budget in 1971. Except in New England, an SMSA consists of a county containing at least one city of 50,000 inhabitants, and

any contiguous counties that are determined to be metropolitan in character, and socially and economically integrated with the central city. A city of at least 25,000 inhabitants, which constitutes a single metropolitan community of 50,000 or more inhabitants, when densely settled contiguous places are included, may also serve as the basis for an SMSA, provided that the county or counties in which the city is located has a total population of at least 75,000. In New England, SMSAs are based upon cities and towns rather than counties. As of October 1975, 276 SMSAs had been officially designated by the Office of Management and Budget (Table 1). In the tables, the category 'Metropolitan' al-

ways refers to the areas designated as SMSAs, and 'Nonmetropolitan' represents all other areas. 'All areas' includes the fifty states and the District of Columbia and excludes all U.S. associated areas.

Although all the major metropolitan regions of the United States and many other cities and large towns are not included in SMSAs, Standard Metropolitan Statistical Areas neither include all of the country's urban population nor exclude all of the rural and farm population. The use of counties as the basis for SMSAs is advantageous in the collection of statistics, but diminishes the accuracy of the distinction between urban and nonurban areas.

Urban-Rural

In addition to SMSAs, the Bureau of the Census, also, defines 'urbanized areas,' which consist of large cities and surrounding built-up areas with population densities of 1,000 or more per square mile. The boundaries of urbanized areas are determined by small census enumeration districts, instead of governmental units. Other cities and towns with a population of 2,500 or more are, also, included as urban territory and are termed 'urban places.' The urban-rural distinction provides a more exact definition of the nation's urbanized population. In 1970, urban territory amounted to only 1.5 percent of the land area of the United States, but it included 73.5 percent of the entire population. In the same year, SMSAs occupied 11 percent of the nation's land, but, incorporated only 68.6 percent of the population. However, the urban-rural classification is much less commonly used than the SMSA-nonSMSA distinction.

Farm-Nonfarm

In order to provide information on the farm population of the

United States, the Bureau of the Census makes a distinction between farm and nonfarm residence. The farm population includes all persons actually living on property of specific acreage yielding farm products sold for specific minimum dollar amounts. In 1970, only 4 percent of all Americans lived on farms. Since the farm population is often a group of special interest when persons living outside metropolitan areas are being considered, information available on the nonmetropolitan population, frequently, is divided between persons living on farms and persons living in other nonmetropolitan areas.”

(1)

Although somewhat insensitive to all of the effects of population density, metropolitan vs. non-metropolitan data are the most readily available for analyzing the impact of population density on health status. How this impact is felt through the medium of resource allocation is readily apparent in Table 2, which depicts the distribution of health care facilities by this dichotomous variable. The general and psychiatric beds are proportionally distributed between both population density levels, and many tuberculosis hospitals have been located outside of major metropolitan areas, probably to benefit from cleaner air. But there the equity (or marked inequity) ends. Specialty hospitals are disproportionately located within metropolitan areas. Similarly, office-based general practitioners slightly favor non-metropolitan areas. But hospital-based practitioners are almost all located in major metropolitan areas, as are a disproportionately larger number of office-based specialty practitioners. Overall, the number of physicians engaged in patient care is almost 20 percent higher in the metropolitan areas than would

be expected based on the population distribution.

- d. Age—Approximately 73 percent of the population resides in metropolitan areas. The distribution of the metropolitan population by age groups parallels the age distributions in non-metropolitan areas. Only two noticeable deviations between these two distributions are apparent. There is a slight rise in the metropolitan age distribution, starting at age 18 (probably from high school graduates relocating to large towns and cities) and peaking at 1.8 percentage points higher than the non-metropolitan distribution in the 25 to 34 years of age group; (i.e. 14.4 percent of the metropolitan population is in this age bracket, while 12.8 percent of the non-metropolitan population is in this age bracket). The metropolitan distribution remains higher than the non-metropolitan age distribution within the 35 to 44 years of age groups, and then drops to where the over 65 years of age group is 2.3 percent below the non-metropolitan distribution. More than 9 percent of the metropolitan population is over age 65, while 11.6 percent of the non-metropolitan population is elderly.

The elderly are disproportionately located in areas where health care resources, especially specialized resources, are fewer. This disadvantaged group is growing in size. In the twelve year period of 1960 to 1972, persons aged 65 years and over increased by 26.5 percent. The racial minorities are not age-distributed in the same proportion as the whites, however. Only 8 percent of the black females are in the 65 and over age group compared with 12 percent of the white females. This same proportion is observed among males where 6 percent of the black

males are in this elderly age category, while 9 percent of the white males are in this age group. Where possible, age-adjusted data will be used to eliminate the bias association with age-distribution factors.

- e. *Racial/ethnic minorities*—This is one of the hardest clusters to deal with, since there is no simple scheme for categorizing the subgroups contained in the cluster. The racial minorities consist of Black American, Native Americans, and members of the Mongoloid stock group whose origins are Asia and the Pacific Islands. A large proportion of the health status data that are available disaggregate racial minorities into white and non-white subgroups. All of the above minorities are normally included in nonwhite subgroups. Such clumping leads to significant errors, however, for the following reasons: first, American Blacks dominate the numbers in the nonwhite groups. In 1974, 12.8 percent of the population was nonwhite. Within this group, over 88 percent of them were blacks. Second, the term “Native Americans” groups together what are frequently referred to as American Indians, as well as Eskimos and Aleuts from Alaska and its neighboring islands. The American Indians comprise an extremely diverse series of subgroups, some of whom are more like non-Indians in their mode of life than they are like each other. American Indians, of course, have a very dissimilar background and ways of life than do the Eskimos and Aleuts. Third, Similarly, the people grouped together as the Asia-Pacific minority group are extremely diverse from each other. Because of their small numbers, separate statistics on them are infrequently available.

Of the ethnic minorities, the largest group, by far, are those

referred to as Spanish American. This group, constituting approximately 5.2 percent of the 1974 U.S. population, can be further divided into subgroups based on country of origin. This group includes whites, nonwhites of black and Indian origins, and many people of mixed racial parent types. The only thing that these subgroups have in common is that they come from countries that were once under Spanish dominion, and most of them are still Spanish speaking and Roman Catholic. The largest subgroups of this cluster is the Mexican American subgroup: 57.2 percent of the people of Spanish origin with the Puerto Rican, 16.6 percent, and Cubans 6.9 percent, representing the second and third largest subgroups. Actually, it is these three subgroups, constituting almost 81 percent of the entire Spanish origin group, that are of concern here, since the remaining subgroups are comprised of persons whose origins were in Spain, Central America, or South America, and do not, necessarily, constitute concentrated disadvantaged groups. Although people from these three major Spanish subgroups share with each other forebearers who spoke the same foreign tongue, there is little other similarity in the nature of their plight or in their location. The Mexican Americans congregate mostly in the agricultural and urban areas of the Southwest; the Puerto Ricans in the large cities of the North (particularly in New York City); and the Cubans in the southern Florida area. Second and third generation Mexican Americans appear to be much better off than the more recent Mexican American arrivals. The large influx of Puerto Ricans and Cubans is too recent to evaluate in a similar manner. It seems that a great deal of the disadvantagedness of these three

groups, however, is due to their recent immigrant status. For example, the Cuban influx included a large segment of upper middle-class people who seemed to have been able to maintain their status within the American society.

D. Interpretational Problems

1. *Interaction Between the Independent Variables*—That there are some relationships between the cross-tabulational variables of interest has been referred to above. That is, a lesser proportion of the elderly group is composed of blacks, and a larger proportion of the non-metropolitan group is composed of the elderly. But there are some other relationships that are quite important:

- (a) *Members of the racial and ethnic minorities tend to live in metropolitan areas.*

Although in 1974, 11.3 percent of the U.S. population was black, 78.6 percent of the blacks lived in metropolitan areas. In the same year, other nonwhites constituted 1.5 percent of the total U.S. population, but 87.6 percent of them lived in metropolitan areas. Again, in the same year, 5.2 percent of the total U.S. population was of Spanish origin, and 81.4 percent of them lived in the metropolitan areas. These proportions should be compared to the 72.8 percent of the total population that lived in metropolitan areas.

- (b) *Members of the racial/ethnic minorities tend to be lower income than the general population.*

Of the 1974 population who were classified by the U.S. Department of Commerce as being below the poverty level, 31 percent of them were blacks, compared with their 11.3 percent proportion in the population; 11 percent of them were of Spanish origin, compared with their 5 percent proportion in

the population; and 2 percent of them were other nonwhites, compared with their 1.5 percent proportion in the general population.

- (c) *Members of the racial/ethnic minorities tend to be lower educated than the general population.*

Table 3 depicts the educational levels for whites and nonwhites. As can be seen nonwhites do not differ much from whites in median school years completed. The 2-1/2 year spread of 1960 had been decreased to 1-1/3 years by 1974, but they are, by virtue of a highly skewed distribution, more greatly represented in the more lowly educated group; that is, the more lowly-income group.

In summary, the racial/ethnic minorities tend to live in metropolitan areas where health care resources are more plentiful, and they do not have as large proportion of their population in the elderly group as do whites. It is in this group that chronic illness and low income can be found. But the racial/ethnic minorities are more poorly educated and more poorly income by virtue of other reasons; and where these factors affect health status, a differential between them and their white counterparts can be expected.

2. *The Concept of the "Disadvantaged"*—This last statement brings us to a discussion of the meaning of some of the comparisons to be made in the following Chapters. Fifty-six percent of all those designated by the U.S. Department of Commerce as below poverty level in 1974 were white. We really would like to compare affluent racial/ethnic minorities with affluent non-minorities and racial/ethnic poor with non-minority poor to factor out whether it is membership in the racial/ethnic minority or being poor that determines differential health status, if such differentials exist.

In many cases, the data do not exist in a disaggregated form so that such comparisons may be made. We are forced,

then, to compare black with white and white with non-white in a number of our comparisons, knowing full well that we are including advantaged blacks and nonwhites and disadvantaged whites in our comparison. Differential income and education levels within both the racial minority groups and whites act as confounding variables and distort the racial comparison. We can, however, predict the effect of these distortions. If the educational and income levels found among the disadvantaged groups were identical or higher to those found among the advantaged groups, any differentials would be attributable to group membership and not to income and education. The educational and income levels of the disadvantaged are, however, lower than those of the white comparison group, and a component of the differentials should be attributable to such socio-economic factors. In addition, if trend data show a diminution of differentials at the same time that a diminution in socio-economic differences is, also, being demonstrated, then additional credence is given to these socio-economic factors as being an important determinant of reduced health status.

3. *Health Status and its Measurement*—

Actually, the problems that one confronts in dealing with the concept of health status are two fold: one is health status, and the second is its measurement. There have been a number of attempts to deal with the former, and we are going to be forced by exigencies to deal solely with the latter. Most of the attempts that have been made in dealing with the health status have fallen short of the mark. Health status cannot merely be the degree of absence of disease processes, if such absences, also, are accompanied by the absence of feelings of well being. It cannot be the relative incidence or prevalence of disease in any simple sense, since a large number of conditions which impact on humans may be subclinical. What we are forced into is hoping that we each have some feeling of what is meant by the concept of health status. Beyond such a loose treatment of its

definition, we must have one additional common understanding of a concept of health status. It is multidimensional in nature, and we must deal with it multidimensionally. This means that we must measure it multidimensionally, and we must interpret it multidimensionally. Our understanding of the health status of the disadvantaged, therefore, cannot be in terms of a single metric, but it must be conceived in terms of a profile.

Even with this conceptual foundation, we are not in a position to surge ahead measuring health status in all the ways we could consider possible. We are, again, faced with the pragmatic problem of defining health status in terms of the data available, rather than trying to define it in terms of theoretically possible metrics. This presents us with one of the severest limitations in assessing health status, because the data available are really quite poor for this purpose. For example, one metric that is almost always available for every category of health problems is that of health care utilization. But can changes in utilization be used to reflect increases in health status? Consider the following: (a) it appears that the disadvantaged have had less access to health care in the past; (b) it also appears that their access to health care has been increasing; and (c) it further appears that there is at least one health problem (*viz.* appendicitis) for which no increases in health status seem to have occurred, even though surgical intervention for this condition seems to have increased substantially.

Another problem with access to health care is associated with mode of delivery. Disadvantaged people have a physician visit rate significantly below that of the advantaged groups. It appears, however, that they are getting an increasing access to health care through hospital outpatient departments and clinics that are providing them with a means of increasing their health status. We do not know whether this mode of delivery provides higher or lower quality of care than the private physician.

A final point about health status metrication is in order. We are trying to conduct analyses of health status in the absence of a reasonable health status model. Given that health status is multidimensional and that it has to be measured as such, there is no conceptual framework for tying each of the various dimensions together, since it cannot be presumed that there is no interaction between the dimensions. We can, for example, look at nutritional deficit as if it were an independent dimension; but we cannot be sure that if improvements in nutrition occurred that they would not, also, be accompanied by improvements along many of the other dimensions measured. In the absence of a model linking the various known health status dimensions together, we have to realize that with multiple measures we may be measuring the same underlying dimension duplicatively.

4. *Data Biases*—A lot of the data to be reported and analyzed in the following Chapters can be taken to be highly reliable. For example, the vital statistics and utilization data are based on tallies that are probably reliable, both in terms of their methods of collection and in terms of them actually measuring what had occurred. One of the chief concerns we should have in the potential biases in these types of data is whether they are accompanied by accurate socio-demographic measures of the people involved.

There is another set of data, however, that are based on self reports derived during interviews. With data derived from such gathering techniques, there is a possibility of bias from a number of sources. For example, there is a possibility that the questions were not understood, or that they were understood in a different light between the disadvantaged and advantaged respondent populations, a chance that the respondents wished to present themselves in a more favorable light than actually obtained, and the possibility that the respondents might have wished to present themselves in a less favorable light than actually obtained. Because of these factors, we

must accept the possibility that the data on which our analyses are based are not valid.

Finally, there are data which are based on a physical examination conducted by a well trained health care professional. On the surface, this technique would appear to be one that would provide us with one of the best sources of health status information. These surveys, however, have required the adoption of examination procedures which are intrusive and have possibly introduced bias through having done so.

In summary, there are difficulties in dividing the populace into advantaged and disadvantaged, obtaining health status data, and in interpreting the actual meaning of these data. In spite of these difficulties, the chapters which follow present too consistent a picture

to prevent us from totally making generalized conclusions. The conclusions which have been drawn are distributed throughout the chapters which follow.

5. Age-Adjusted Rates—Since prevalence rates, and particularly death rates, vary with age, it is important to consider the different age distributions of any groups that are being compared. Ideally, one would compare prevalence and death rates for each age group to remove the impact of age in comparison to racial or other differences. In the case of death rates, published data are available which does in fact take into account the different age distributions of racial groups by calculating an age-adjusted death rate for racial minorities and for whites.

These age-adjusted rates serve to remove any differences in death rates between racial groups that result from a difference in the age distribution of the racial group in order to observe the racial difference in death rates.

6. Trend Interpretation—When prevalence or death rates are available over time, an attempt has been made in this work to make a statement about the future position of the comparative health status of the disadvantaged with the rest of the population on the basis of past rates of change. Frequently, these trend statements are made based on data with only two data points. These are statements which are made to call the readers attention to the apparent existence of a trend and these statements are always made with the qualification that the present rates of change will not necessarily continue.

Table 1

Percent Distribution of Families by Income, 1974*

(Total money income in 1973, in constant 1973 dollars. Families as of March 1974.)

Income	Total number of families	All areas	Metropolitan	Nonmetropolitan
Total	55,053	100.0%	100.0%	100.0%
Up to \$4,999	8,083	14.7	13.0	19.1
\$5,000 to \$9,999	13,419	24.4	22.1	30.3
\$10,000 to \$14,999	14,040	25.5	25.4	25.8
\$15,000 to \$19,999	9,438	17.1	18.4	14.0
\$20,000 and more	10,074	18.3	21.1	10.9

Source: (1)

*Recalculated to include as metropolitan the population of counties designated as metropolitan since 1970.

Source: "Comparative Statistics on Health Facilities and Population—Metropolitan and Nonmetropolitan Areas," American Hospital Association, 1977.

Table 2

Distribution of Health Care Resources by Population Density

Resource	Metropolitan	Non-Metropolitan
Population	72.8%	27.2%
Hospitals		
General	74.6%	25.4%
Psychiatric	72.2	27.8
T.B.	60.0	40.0
Maternity	100.0	0.0
EENT	92.4	7.6
Rehabilitation	93.0	7.0
Orthopedic	96.1	3.9
Chronic Disease	82.1	17.9
All other Hospitals	74.6	25.4
Physicians		
Total Patient Care		
Physicians	86.6%	13.4%
Hospital Based Practice	94.5	5.5
Office-Based General Practice	68.9	31.1
Office-Based Medical Specialties Practice	89.7	10.3
Office-Based Surgical Specialties Practice	86.1	13.9
Office-Based Other Specialties Practice	89.5	10.5

Source: Authors

Table 3

Academic Attainment by Race for Persons 25 Years Old and Older, 1960-1974
(Entries are percent of total population)

Less than 5 years of elementary school

	1960	1970	1972	1974
White	6.7	4.2	3.7	3.5
Non-white	23.5	14.7	12.8	12.2

4 Years of high school or more

White	43.2	57.4	60.4	63.3
Non-white	21.7	36.1	39.1	44.3

4 years of college or more

White	8.1	11.6	12.6	14.0
Non-white	3.5	6.1	6.9	8.0

Source: Authors

References

1. "Comparative Statistics on Health Facilities and Population—Metropolitan and Nonmetropolitan Areas," American Hospital Association, 1977.

List of Tables

- Table 1** Percent distribution of families by income, 1974. **26**
- Table 2** Distribution of health care resources by population density. **26**
- Table 3** Academic attainment by race for persons 25 years old and older, 1960-1974. **27**

List of Figures

- Figure 1** Percent of population below the poverty level, 1973 and 1975. **20**
- Figure 2** Percent of population 25 years old and over by years of school completed, 1974. **21**

Chapter III

Vital Statistics: A First Look At Health Status

Contents

A. Overview	31
B. Introduction	31
C. Birth Rates and Fertility	32
D. Mortality	33
E. Life Expectancy	35
F. Infant Mortality	35
G. Maternal Mortality	39
H. Marriages and Divorces	41
References	53
List of Tables	53
List of Figures	54

Chapter III

Vital Statistics: A First Look At Health Status

A. Overview

Comparisons of major vital statistics of the disadvantaged with the rest of the population revealed several important differences. The birth rate of the total U.S. population has been declining in recent years, at a much faster rate among the white population than among racial minorities. The birth rate of racial minorities was one and a half times that of whites in 1975, and it was higher than that experienced by whites as long ago as 1940.

Mortality rates in the 70's began an accelerated decline after 20 years of only modest declines. Although the overall mortality rates of racial mortality rates of racial minorities have declined considerably over time, their overall mortality is still one and one-third that of whites. Higher death rates were, also, observed among lower income groups and the less educated. Unfavorable racial differentials in mortality were observed for all major causes of death, with the exception of deaths from suicide and arteriosclerosis. The largest relative racial differentials occurred for early infancy mortality, diabetes mellitus, and cirrhosis of the liver. Regarding absolute racial differentials, cerebrovascular diseases, diseases of the heart, and malignant neoplasm reflected the largest racial differentials.

Life expectancy comparisons among racial, socioeconomic, and education groups displayed similar patterns to mortality rates, as would be expected. Although greater gains in longevity were experienced by racial minorities, their predicted length of life in 1975 was over 5 years shorter than that of whites.

Infant mortality in the U.S., among

both whites and racial minorities, compares unfavorably with that of several other countries. While improvements in infant mortality have occurred among whites and nonwhites, the nonwhite rate of decrease was lower than that of whites until recently. Racial minorities have almost twice the infant mortality of whites. The Black American to white differential is greater than the American Indian to white differential. American Indians have experienced greater reductions in infant mortality than Black Americans. A complex of inter-related biological, environmental, behavior, and genetic factors are related to infant mortality. The frequency of most risk factors is higher in the nonwhite population. Although the racial differential from this cause of death has lessened somewhat, it is still substantial; and if present rates of decline among both race groups is maintained, the racial differential will remain substantial for some time.

The maternal mortality experience of racial minorities is worse than their infant mortality experience. Nonwhites have over three times the maternal mortality of whites, and this differential has not been reduced significantly in the past 25 years. Greater improvements in maternal mortality were observed among American Indians than among all racial minorities combined, but they, too, have a rate almost one and three quarters the rate of whites. Maternal mortality, due to abortion, decreased substantially between 1965 and 1975.

Marriage and divorce rates of racial minorities, also, differ from those of the rest of the population. A smaller percent of the nonwhite population were married in 1975. The percent of women married has been decreasing

for both racial groups, but larger decreases occurred among nonwhite women in the last 15 years. The rate of divorce has increased in all racial groups, but the proportion of divorced persons is greatest among racial minority females.

B. Introduction

As a first look at the health status of the disadvantaged, this chapter forms the foundation for the discussion of other health problem areas covered in the chapters which follow. The material presented in this chapter represents the beginning of the process of answering the basic questions of concern in this report. How do the disadvantaged differ from the rest of the population, with regard to health status, utilization of the health care systems, and expenditures for health care, at the present time and over time? What factors explain any of these differences?

This chapter treats that subdivision of health statistics commonly referred to as vital statistics. Births, deaths, marriages, and divorces are the events which are measured as vital statistics and a means by which the health, growth, and movement of a population may be measured.

Births represent population renewal and growth. Deaths are representative of the most severe state which can result from ill health. Marriages in addition to their relation to birth rates and to health are indicators of economic trends. Births, deaths, and marriages, along with the related measures, fertility, life expectancy, and divorce are the basic measures used in this chapter to describe the health status of the disadvantaged, relative to the remainder of the population.

C. Birth Rates and Fertility

Records of births are kept primarily to facilitate measurement of population growth and to plan services for different age groups of populations. Factors surrounding birth, such as the age and condition of the mother, legitimacy, condition of the live birth, and care received at the time of birth have long range health implications.

In Table 1, the number and the rate of live births, as well as fertility rates, are presented for racial minorities and for whites for selected years from 1940 to 1975. The birth rate is the number of live births per 1000 population. In 1975, the U.S. birth rate for the total population was 14.8. The racial minority birth rate, however, was 53.6 percent higher than that for whites, 21.2 for racial minorities in comparison with 13.8 for whites. The birth rate in 1940 of races other than white was only 43.5 percent higher than the white birth rate, 26.7 compared with 18.6. This growth in the ratio of racial minority to white birth rates occurred during a period in which the overall U.S. birth rate decreased 23.7 percent, from 19.4 in 1940 to 14.8 in 1975. A greater decrease occurred among whites, 25.8 percent, compared with a 20.6 percent decrease among racial minorities during this period. The birth rate of racial minorities in 1975 was still higher than the birth rate experienced by whites in 1940.

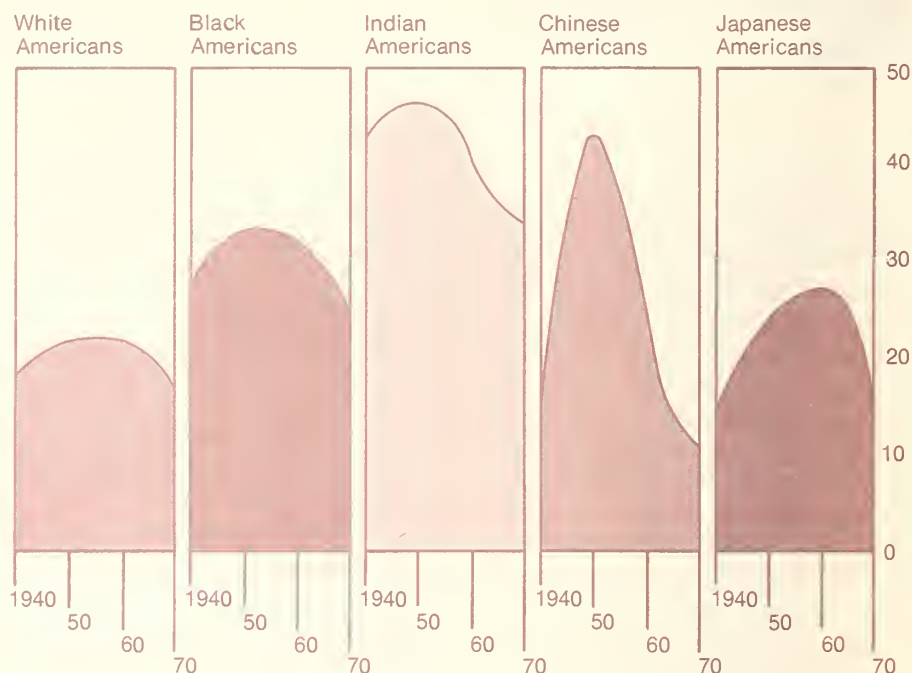
In Figure 1, birth rates of other racial ethnic/minorities are presented from 1940 to 1970. The birth rates of American Indians and Black Americans are higher than the rate of White Americans, while the rates of Japanese and Chinese Americans are lower than White Americans.

The birth rate is partly a function of the age distribution of females in the population. For this reason, the fertility rate, which is the number of live births per 1,000 women age 15 to 44, is, also, used to describe the birth experience of populations. The U.S. fertility rate decreased 35.9 percent from 1940 to 1974. While the fertility rate of whites was decreasing 39.1 percent, that of nonwhites was decreasing 26.6

Live Births

Live Births Per 1000 Population for Ethnic/Racial Minorities

Figure 1.



Source: Statistical Abstracts of the United States 1973 94th Annual Edition, U. S. Dept. of Commerce Bureau of the Census, July 1973, p. 33
Unpublished data from National Health Statistics.

percent during this period (see Table 2). The fertility rate of nonwhites was 22.4 percent higher than that of whites in 1940 and 34.4 percent higher in 1974. Since the fertility rate of racial minorities is, also, higher than that of whites, the higher birth rate of racial minorities cannot be explained by an excess of women of child bearing age among this group.

The intrinsic rates of natural increase is used to indicate the change that would occur in a population on the basis of birth rates and death rates alone. These are, also, presented in Table 2. Given the fertility rates and death rates of recent years, significant shifts in the racial composition of the population are to be expected. The direction of change in population composition would be a decrease in the white population and an increase in racial minorities.

The higher birth rates experienced by racial minorities may be due to several

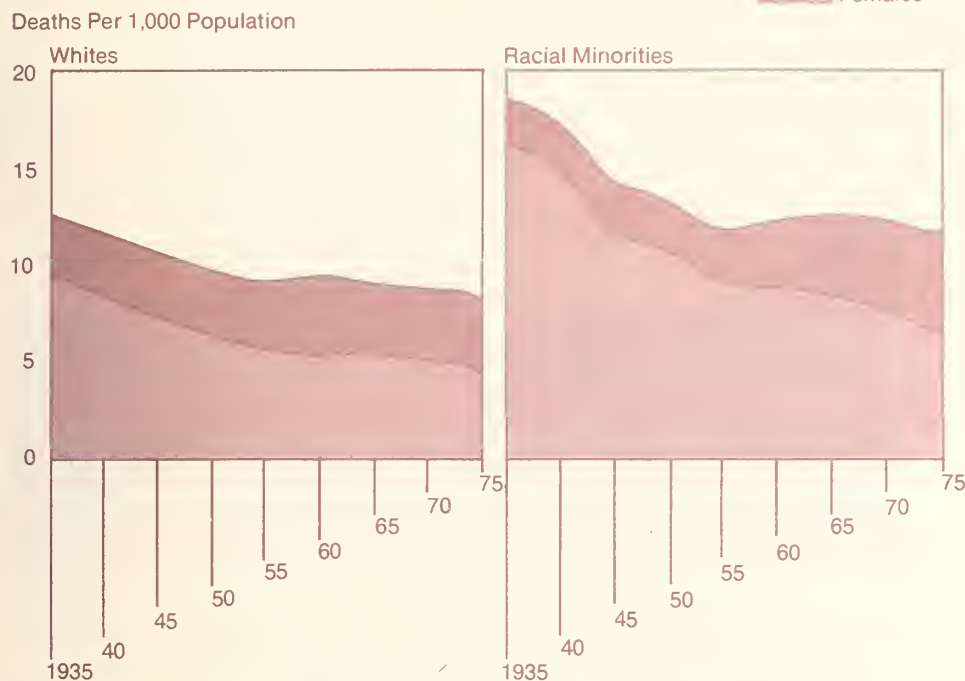
factors. One factor that should not be excluded from consideration is personal preference. Factors with perhaps a stronger influence on minority birth rates are related to the lower frequency which minorities practice contraception, obtain abortions, or undergo sterilization. These practices may, in turn, be a result of greater financial barriers, less awareness of the availability of these services, a lesser acceptance of these practices, or less availability of services.

Data from the 1973 National Survey of Family Growth indicate that nonwhites report, on an average, a much higher number of unwanted births than whites; .88 births per woman compared with .24 births per woman (see Table 3). From the same survey, it was found that 29.5 percent of white women age 15-44 were not practicing any form of contraception, compared with 40.0 percent of black women (see Table 4).

Mortality—Race and Sex

Age Adjusted Mortality Rates by Race and Sex, U. S. 1935-1975

Figure 2.



Source: (1) "Facts of Life and Death" National Center for Mental Health Statistics, USDHEW, Rockville, Md., 1974, Table 24, p. 29. (2) Department of Health, Education and Welfare Monthly Vital Statistics Report, Final Mortality Statistics, 1975, Vol. 25, No. 11.

D. Mortality

The transition from good health to ill health is often a gradual one, and the decision where one state ends and the other begins involves judgment. Because mortality is easy to ascertain, it has continued to be the most reliable single indicator of health conditions. Mortality statistics, however, have the limitation of being indicative of only a fraction of the morbidity in a population. Since death may occur in the absence of lengthy morbidity and many disabilities of long duration do not result in death, morbidity and disability measures are used in addition to mortality measures to describe the health status of a population.

Although the death rate alone is not a perfect measure of health status, a decrease in the death rate provides a good tool for assessing overall health improvement in a population. No matter how healthy a population may be, a large proportion of elderly persons in

the population will raise the death rate of that population. Therefore, when comparisons of death rates over time or among sub-groups are made, differences in the age-distribution of the comparison groups or periods must be taken into account. This is done by applying the age-specific death rates of a given year or subgroup to the age distribution of the population at one point in time, and it is referred to as the direct method of age adjustment. All the death rates discussed in this section are age-adjusted to the 1940 U.S. population.

The greatest reductions in mortality rates in the U.S. occurred in the first half of the century. The age-adjusted mortality rate decreased from 17.8 deaths per 1000 population in 1900 to 7.7 in 1955, an average yearly decrease of 1 percent. Between 1955 and 1970, however, the death rate decreased from 7.7 to 7.1 or on an average of .5 percent a year. In the

70's, the death rate again began an accelerated decline from 7.1 to 6.4, an average yearly drop of 2 percent (see Table 5).

Recent improvements in U.S. mortality rates, after a period of relative stability, have attracted attention, but no conclusions on the reasons for these gains is possible at present. This uncertainty was summed up aptly in a statement made before the Senate Health Subcommittee of the Health and Scientific Research Committee on Human Resources by Mrs. Dorothy Rice, Director of the National Center for Health Statistics. She states: "Whether the downward trends in mortality result from a decline in the occurrence of diseases, advances in medical treatment after diseases have occurred, social and economic improvements, changes in health habits and the environment that affect health, or in what mixes and proportions such factors are at work, we do not know." (1)

Nonwhites have experienced greater improvement in mortality since 1970 than have whites. While the decrease in the mortality rates for the total population has been 2 percent a year, the decrease among nonwhite males has been 2.1 and among nonwhite females 3.1 percent. Notwithstanding the larger gains among nonwhites, they continued to experience an excess mortality, relative to whites, of 39 percent in 1975 compared with 44 percent in 1970, and 54 percent in 1950. In 1975, the female nonwhite death rate was 44 percent greater than the white female rate, while the male nonwhite rate was 36 percent greater than the white male rate. Before the mid-fifties, death rates for nonwhites of both sexes were higher than those for whites, of either sex; but in 1955, the female nonwhite death rate dropped below the rate for white males and has been lower since that time. (see Figure 2).

One of the racial minorities included in the combined nonwhite races are American Indians. Death rates of American Indians compare unfavorably with death rates of white persons in the U.S. In 1971, the age-adjusted

death rate of American Indians was 33 percent higher than that of the total population: 9.3 per 1000 population compared with 7 for the total population (see Table 10, Chapter V., and Table 5). The death rate for Indians, however, was slightly lower than the death rate for all other races, 9.6. Mortality rate of Indians for a three year period, 1959 to 1961, were lower than that of Black Americans who experience the highest mortality of those races included in the total other races (see Table 6).

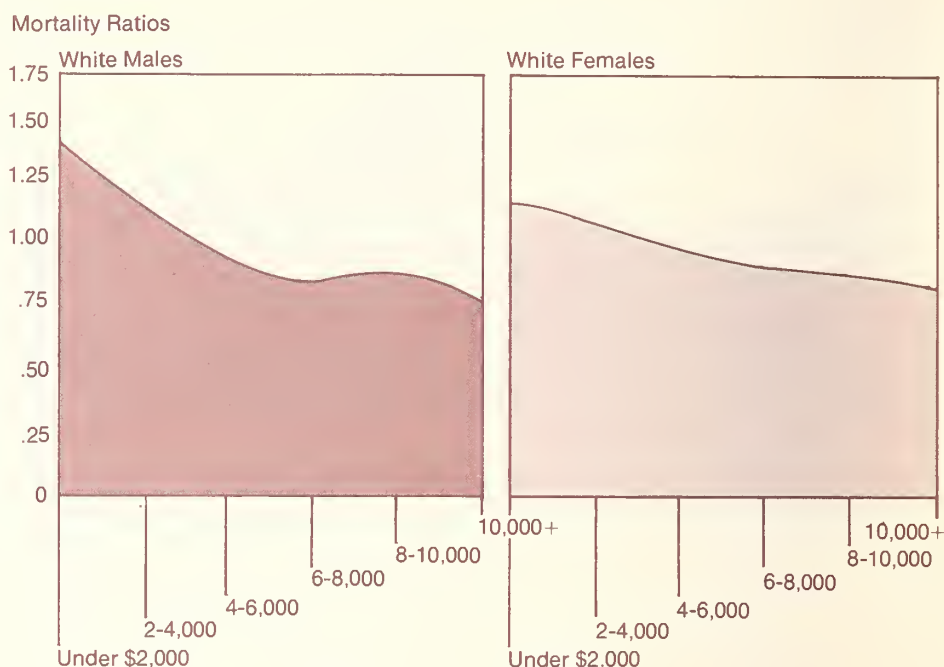
One of the most extensive works on mortality and socioeconomic factors was done by Kitagawa and Hauser (2). Although their data apply to 1959, it is likely that some of the associations found in their study still hold today. Kitagawa and Hauser looked at the relationship between several social and economic characteristics and mortality. In Table 6, mortality indexes of five racial groups are presented with the median family income of those groups. The mortality index is the mortality rate of the racial group divided by the mortality rate for the total population. If mortality does not vary by race all indexes would equal 1. The mortality index minus 1 represents the percent by which the mortality rate for that race is lower or higher than that of all groups. Japanese Americans had the lowest death rates, 32 percent $((.68 - 1) \times 100 = 42 \text{ percent})$ and they had the highest median family incomes. Blacks had the highest mortality rates but they also had a higher income than Indians, who had a slightly lower mortality rate. Although the association between income and mortality is not perfect, a relationship does appear to exist.

In Figure 3, mortality ratios by level of family income are presented for white family members, by sex. In this case, the mortality ratio is calculated by dividing the mortality of a specific income group by that of all income groups. If mortality does not vary with income, each income group would have the same mortality rates, and the ratio of those rates would be equal to 1, as before. A real, although not per-

Mortality—Income

Mortality Ratios by Level of Family Income (Standardized for Age) for White Family Members 25-64 Years of Age, by Sex: U. S. 1960

Figure 3.



Note: The mortality ratio is a comparison between the death rate of a particular income group with the death rate for all income groups. An adjustment is made for the difference in age between the particular income group and all income groups.

Source: Kitagawa, Evelyn M. and Philip M. Hauser, "Differential Mortality in the U. S.: A Study in Socioeconomic Epidemiology," Harvard U. Press, Cambridge, Mass., 1973.

fect, relationship between family income and mortality for both males and females is evident from Figure 3. The mortality rates of low income white males are 49 percent higher than the mortality rate of all income white males, while the mortality rate of high income males is 16 percent lower than that of all males. A similar difference is found among females. Kitagawa and Hauser, also, found that mortality was inversely related to education, and was higher among "blue collar" occupations (i.e., service workers, laborers, and operatives) compared with other occupation groups. (2)

It is not surprising that mortality is higher among lower socioeconomic groups. Whether poverty contributes to ill health and eventual death, or whether the existence of ill health prevents economic gain, one would expect the two to go hand in hand. If any corrective actions are to be taken, it is im-

portant to identify those areas in which the disadvantaged are at the greatest disadvantage with regard to health status, where the greatest gains in mortality have occurred, and where efforts toward improvement should be placed. A more thorough treatment of disease specific mortality is found in chapters dealing with specific disease conditions. In this chapter, the rates and recent changes in the rates of the ten leading causes of death will be examined briefly.

In Table 7, age-adjusted death rates for the ten leading causes of death by race and the percent change from 1973 to 1975 are presented. For the total population and for whites, with eight of the ten leading causes of death, death rates decreased from 1973 to 1975, and with two of the causes, malignant neoplasms and suicides, death rates increased. For racial minorities, death rates increased with

only one cause of death, suicide, while the death rate from malignant neoplasms decreased among racial minorities. Suicide and arteriosclerosis are the only two causes of death among these ten leading causes for which racial minorities have lower death rates than whites. The suicide rate among racial minorities, however, is increasing.

The degree of disparity in the mortality experience of whites compared with all other races may be ascertained by comparing the relative differentials for each cause of death or by comparing the absolute differentials for each cause of death. In comparing relative differentials, the ratio of the death rate of all other races over the death rate for whites for each cause of death is calculated. In making a comparison of absolute racial differences, the death rates of the racial group with the lower rates (in this case whites) is subtracted from the death rate of the racial groups with the higher death rates (in this case all other races). Those causes of death for which the absolute racial differentials were greatest in 1975 are as follow: a) cerebrovascular diseases for which all other races experienced 30.7 *more* deaths per 100,000 population than did whites: 82.0 deaths among all other races compared with 51.3 deaths per 100,000 population among whites; b) diseases of the heart for which all other races experienced 28.0 *more* deaths per 100,000 population than did whites: 245.2 deaths among all other races compared to 217.2 deaths per 100,000 population among whites; and c) malignant neoplasms for which all other races experienced 26.9 *more* deaths per 100,000 population than did whites: 155.0 deaths among all other races compared to 128.1 deaths among whites.

Those causes of death for which the relative racial differentials were greatest in 1975 are as follow: a) certain causes of mortality in early infancy, where the death rate among racial minorities is 2.73 times that of whites; b) diabetes mellitus, where the death rate is 2.09 times that of whites; and c)

cirrhosis of the liver, where the death rate is 2.09 times that of whites. The ten leading age-adjusted death rates that appear in Table 7 are presented yearly in the Monthly Vital Statistics Report, Final Mortality Statistics. In the category "certain causes of mortality in early infancy", all causes of death that are included in the familiar infant mortality rate are not included in that published table. For instance, birth injuries, difficult labor, other anoxic and hypoxic conditions, and some other causes of mortality in early infancy are excluded. Among racial minorities, the greatest percentage decrease in death rates between 1973 and 1975 occurred in deaths from influenza and pneumonia, while the greatest decrease among whites occurred in deaths from arteriosclerosis.

E. Life Expectancy

Life expectancy is regarded as a particularly useful indicator for the evaluation of general health conditions. The life expectancy at birth is predictive of the life patterns of individuals, if the mortality experience at the time of their birth were to prevail throughout their lifetime. The actual length of life will be different from existing life table values, if mortality rates continue to decline throughout their life.

Expectation of life at birth in the U.S. in 1975 was 72.5 years for both sexes and all races combined. Disaggregating this statistic by race, however, we can see a racial differential, since life expectancy is 73.2 years for whites, and 67.9 years for nonwhites (see Table 8 and Figure 4). Women have a considerably longer life span expectancy than men (7.8 years). The sex differential is, also, 7.8 years for whites, but almost a year longer for nonwhites (8.7 years). From 1920 to 1975, nonwhite longevity gains were greater than white longevity gains. The gains achieved during this 55 year period were 4.9 years for nonwhite females and 3.1 years for nonwhite males. The years of life gained from 1920 to 1975 for white males, white females, nonwhite males, and nonwhite females were 15.0, 22.2, 18.1,

and 27.1, respectively. Despite the greater gains among nonwhites, they still have shorter life expectancies than do whites. White females live 4.9 years longer than racial minority females and white males live 5.8 years longer than racial minority males.

The life expectancies in 1959-61 of 4 ethnic racial groups are presented in Figure 5. In all groups, women have longer life expectancies than do men. The longest life expectancy of any ethnic group is that of the Japanese. The Japanese male lives 11 years longer than Black males and 7 years longer than Chinese and White males. Japanese females live 11 years longer than Black females, 4 years longer than Chinese females and 6 years longer than White females.

Life expectancy, also, appears to be related to education and income. In Table 9, life expectancy is seen to be longer for those who completed more years of education. In Table 10, life expectancy by geographical division is presented, and states are ranked by life expectancy and the proportion of their population composed of persons in poverty or racial minority groups. Those states in the south with the highest poverty and racial minority ranks are the states with the lowest life expectancy.

F. Infant Mortality

The infant mortality rate has conventionally been used as an indicator of health status and as a measure of general living standards of a population. Since the infant mortality rate is based only on those deaths occurring during the first year of life, the factors impacting on this death rate are slightly more limited than those impacting on the total death rate. Thus, the limited age period, on which this rate is based renders the rate more tractable analytically than the total death rate. On the other hand, the health of the infant is influenced by the health of the mother, and in addition, it is very sensitive to the general health conditions of the environment. Thus, the mortality and morbidity experience of infants may serve as a barometer of the general environmen-

tal conditions that impact on the health of all age groups in the population, to one degree or another.

In 1975, 16.1 out of every 1000 infants born alive in the U.S. died before they reached one year of age, 14.2 of every 1000 white infants born alive, and 24.2 of every 1000 nonwhites born alive died in infancy. The total infant mortality rate in the U.S. is almost twice the rate in Sweden, which has an infant mortality rate of 8.3, while the nonwhite infant mortality is close to three times the rate in Sweden. Not only is U.S. infant mortality higher than that of Sweden, it was higher than the rate of 12 other countries in 1974 (8). While slight recording differences may exist in a few countries, the methods of defining and recording infant deaths in most developed countries is considered comparable to that of the U.S. Therefore, it is generally accepted that the U.S. does, in fact, lag behind several other countries in its ability to reduce infant deaths.

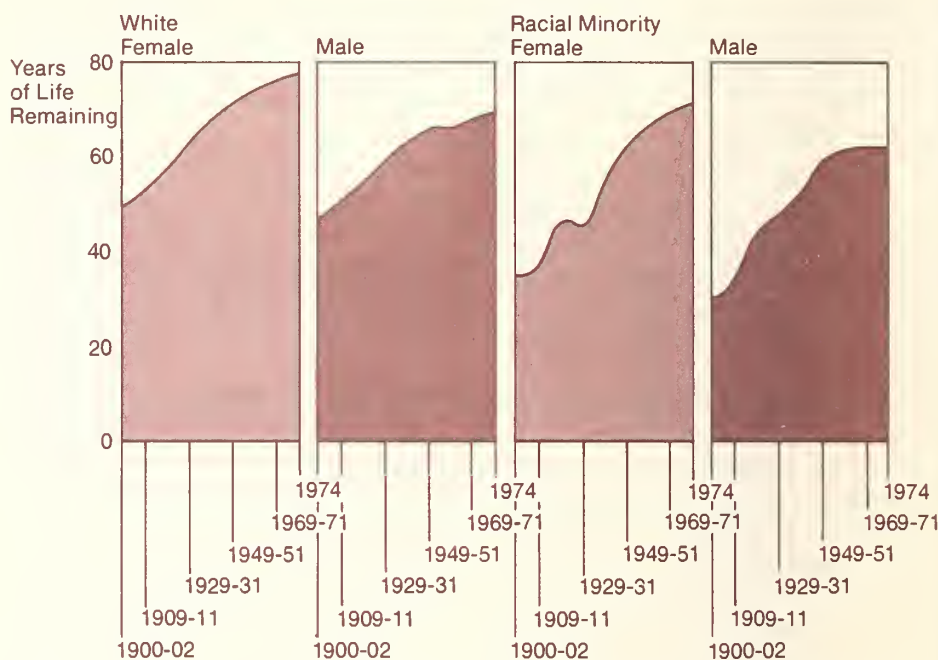
Substantial reductions have occurred in infant mortality from 1950 to 1975. Infant mortality for the total population decreased 45 percent, with only a slightly greater proportional decrease occurring among white infants, 47 percent, than among racial minority infants, 46 percent (see Table 11 and Figure 6). Even more rapid reductions occurred between 1970 and 1975, with a slightly higher rate of decline among racial minorities. If 1970 to 1975 rates of decline are maintained from 1975 to 1980, the rate for whites will be 11.3, while the nonwhite rate will be 18.9 by 1980. The rate for nonwhites would then be 67 percent higher than that of whites compared with a 70 percent differential in 1975. Certainly the disparity among races is narrowing but the rate at which it is happening is low, and the difference does not show signs of disappearing in the near future.

Included in the nonwhite infant mortality rate are those of Blacks, Indians, Japanese, Chinese and other races. In 1974, the rate for all racial minorities combined was 24.9, while the rate for Black Americans was 26.8, and for American Indians it was 18.5.

Life Expectancy—Race and Sex

Estimated Average Length of Life in Years, by Race and Sex: Death Registration States, 1900-1928, and United States, 1929-1974

Figure 4.

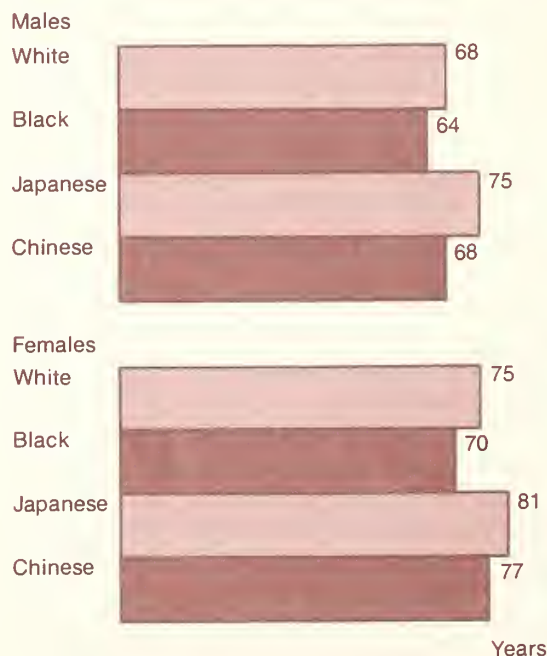


Source: U.S.P.H.S., National Center for Health Statistics, Vital Statistics of the U. S., 1974, Vol. II, Section 5. In preparation.

Life Expectancy

Life Expectancy at Birth by Ethnic Racial Group, California, 1959-1961

Figure 5.

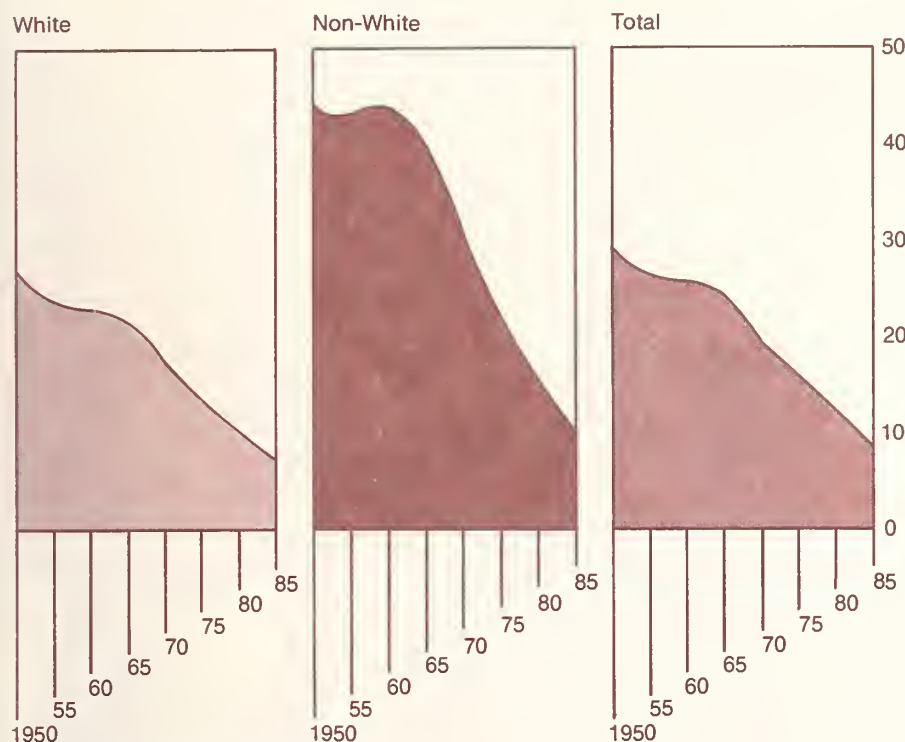


Source: Breslow, Lester and Bonnie Klein, "Health and Race in California," "Journal of the American Public Health Association," Vol. 61, No. 4, April 1971, Figure 5, p. 769.

Infant Mortality

Infant Mortality Rates
Deaths Per 1000 Live Births

Figure 6.



Note: Rates later than 1975 are projected.
Source: Statistical Abstract of the United States 1973.
Bureau of the Census, U. S. Dept. of Commerce, July 1973.

Japanese Americans, Chinese Americans, and the other combined nonwhite races had infant mortality rates lower than Whites (see Figure 7). Greater improvements have been made in the infant mortality rates of Indians than the rates of other racial/ethnic groups combined. The drop in the rate of American Indians from 1960 to 1975 was 62 percent, compared with a 44 percent drop for all combined minority races. The 1970 to 1975 decline was more comparable, 22.6 percent for Indians and 21.7 percent for all other combined racial minorities. (see Table 12).

The majority of infant deaths occur in the first 28 days of life, the neonatal period. In 1975, 11.6 (72.0 percent) of the 16.1 infant deaths per 1000 live births occurred during the neonatal period, and 4.5 (28 percent of the 16.1 infant deaths occurred from the end of the first month through the 11th month of life, the postneonatal period.

Neonatal rates are presented in Table 11, and neonatal and postneonatal rates are presented in Figure 8 from 1965 through 1975. The largest racial mortality differential occurred during the postneonatal period. Nonwhites had an infant mortality rate that was 70.4 percent greater than whites, a neonatal rate that was 61.5 percent greater than whites, and a postneonatal rate that was 94.7 percent higher than whites in 1975.

The reduction in neonatal mortality among racial minorities, between 1965 and 1975, was greater during the postneonatal period (50.3 percent) than during the neonatal period (33.9 percent). The reverse was true for whites, who experienced greater reductions in the neonatal period (35.4 percent) compared with a 29.6 percent reduction in the postneonatal period. The two major causes of death in the first month after birth are premature birth, alone or contributory (7.9 per 1000

live births in 1970) and postnatal asphyxia, usually associated with respiratory syndrome, (3.6 per 1000 live births) (4 p. 28). The major cause of postneonatal infant death is the sudden infant death syndrome, also known as crib death (4, p. 28).

Factors Contributing to Infant Mortality

Low birthweight. The increased risk of death among very low birth weight infants is well documented. Neonatal mortality among low birth weight infants is over 20 times as high as among heavier infants. Furthermore, morbidity, particularly that associated with the central nervous system, is higher among low birth weight infants than among other infants (5, p. 28).

The percent of low birth weight live births (i.e., live births weighing 2500 grams or less) increased in the U.S. from 7.5 percent in 1950 to 8.2 in 1968. This increase is mainly among births other than white (5, p. 23).

Percent of low birth weight live births		
	1950	1968
Total	7.5	8.2
White	7.1	7.1
Other	10.2	13.7

The percent of low birth weight live births is substantially higher among nonwhites and is on the increase, while the ratio of not fully understood, several factors, such as smoking, genetic, and socioeconomic factors are known to play a part (5, p. 23). Although low birth weight is directly related to socioeconomic level and is much more frequent among nonwhites who have a disproportionate number of low income persons, the socioeconomic status of nonwhites is not considered to be the only characteristic of nonwhites concomitant with low birth weight.

"A recent report which investigated socioeconomic factors among white and other infants concluded that very little of the variance in birth weight was accounted for by numerous socioeconomic variables which were studied. The authors cautioned that the techniques they used failed to

remove the possibility that a difference existed between white and all other births which could not be accounted for by socioeconomic variables." (6).

Although a higher and increasing proportion of low birth weight births occur among nonwhites compared with whites, nonwhites mortality among low birth weight births is lower than that of whites. That is, although neonatal mortality is definitely higher among both white and nonwhite low birth weight births, the neonatal death rate of nonwhites among low birth weight births is not as high as that of whites among low birth weight births. (9)

Age, Parity and Marital Status. Age of mother, parity, and marital status are factors which are related to each other and are risk factors in infant mortality. Parity refers to the number of live births to one woman. Thus, a "high parity woman" is a woman that has given birth to a larger number of live children than a low parity woman. It is distinct from other measures, such as fertility, which characterize the number of births within a geographic area using as a base reference for all women of childbearing age living within that area, whether or not they have a child. Infants born of mothers under age 19 are more likely to be premature than infants born of mothers between the ages of 20 and 34. Prematurity rates, again, increase among births to women age 35 and over. More births occur among nonwhite women under age 20 than among white women age 20.

Fourth and fifth birth order infants have a higher mortality risk. More nonwhite births occur to high parity nonwhite women than to high parity white women. This of course stems from the higher birth rates observed among nonwhites.

Whether out of wedlock births impacts on infant mortality, because of the stress or whether out of wedlock births are associated with younger aged mothers or lower socioeconomic levels, which in turn are the real risk factors, or all three of these

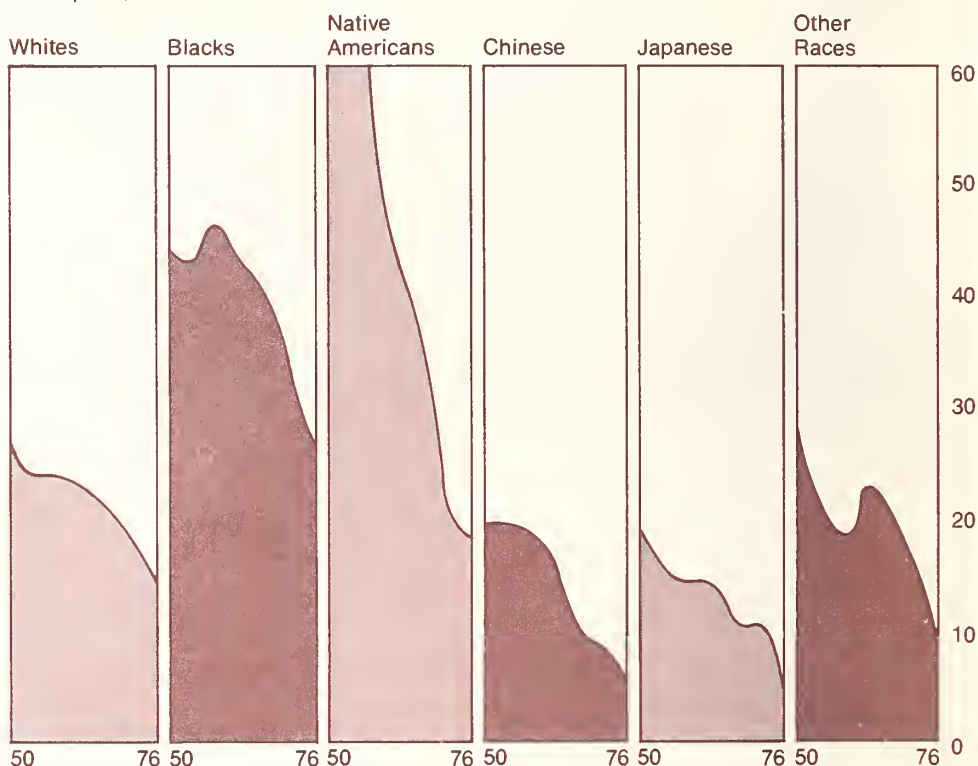
Infant Mortality

Rates by Specified Race, 1950-76

Figure 7.

1976 Rates: 15.2 (All Groups)

Rates per 1,000 Live Births



Source: U.S.P.H.S., National Center for Health Statistics, unpublished vital statistics data.

possibilities, is not clear. Out of wedlock births are increasing for both races, but the increase is greater for nonwhites (see Table 13). In addition, a substantial racial differential exists in the frequency of out of wedlock births. Nonwhites experience a rate of 81.5 of out of wedlock births per 1000 unmarried women, while whites experience a rate of 11.8 per 1000 unmarried women (see Table 13).

Socioeconomic factors. Socioeconomic level is known to be inversely related to infant mortality. Infant mortality rates are lower among persons at higher income levels. In Figure 10, infant mortality rates of whites and nonwhites are presented by income and father's education. Among both whites and nonwhites infant mortality rates decrease with income; however, the

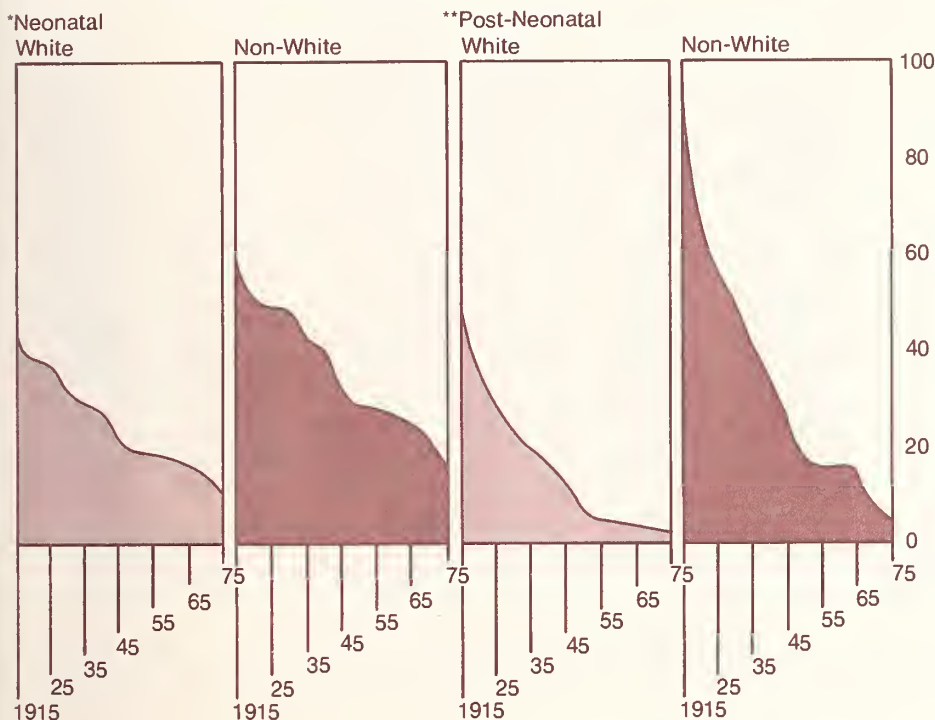
relationship is not perfect. For both races, the lowest infant death rates occur at the middle income level, with very high rates at low income levels, and lower rates at high income levels. Infant mortality among white families with incomes of \$10,000 is 29.7 percent lower than among white families with incomes under \$3,000; while infant mortality among nonwhite families with incomes of \$10,000 is only 11.5 percent lower than that of nonwhite families with incomes of under \$3,000. Also, white infant mortality appears to be related to the father's education, in that, the rate is 37.7 percent lower in families in which the father's education is one to three years of college, compared with the rate in families in which the father's level of education is eighth grade or less. However, nonwhite infant mor-

Neonatal and Post-Neonatal Mortality Rates

Neonatal* and Post-Neonatal** Mortality Rates, by Race
(U.S.A., 1915-1975).

Figure 8.

Deaths Per 1000 Births (Logarithmic Scale)



*Neonatal: Death Under One Month Per 1000 Live Births.

**Post-Neonatal: Deaths From One Month to Twelve Months Per 1000 Live Births.

Source: U. S. Department of Health, Education and Welfare. Public Health Services, National Center for Health Statistics. *Monthly Vital Statistics Reports*, Vol. 23, No. 13, May 30, 1975, Table E, p. 5.

tality is only 11.3 percent lower in families at the higher education level.

An explanation for the weaker relationship between infant mortality and income and education among non-Whites is that the health of the mother and the outcome of her pregnancy is influenced more by the environment in which she was reared than on her present environment. "United States non-white mothers probably are currently in a higher income and educational status than that in which they were reared, the difference accounting for the lag between current social status and observed health status." (10)

Medical Care. The amount and quality of medical care received by the infant and mother contribute to the outcome of the pregnancy. Medical care of the neonate is divided into the care

received prior to delivery (prenatal care) and the care received at the time of delivery. Perhaps, no more than 25 percent of infant deaths may be preventable by medical means, since according to one study, it was the "judgment of the investigators that 75 percent of the deaths which occurred in this segment of the population, in the indigent, could not have been prevented by better prenatal, delivery, sick child, or well child care." (8)

To another observer the benefit of prenatal care is even more doubtful. "The medical complications and the other associations with an unfavorable outcome of pregnancy are so prevalent among low-income high-risk patients, that the few months the obstetrician sees the patient prior to labor are insufficient to offset the years of deprivation and its effects on the

growth and development of the mother." (11)

The relatively recent growth of intensive neonatal care centers, where high risk infants are transferred after delivery, or high risk mothers are transferred before delivery, seems to hold some hope for reducing mortality in the neonatal period. The effectiveness of such programs, however, has not been proved, partly because time is required for evaluation, and, partly, because such a complex of factors contribute to infant mortality that identifying the effectiveness of any one measure is extremely difficult.

"U.S. infant mortality rates were seen to be higher for nonwhites than for whites. To what degree this is caused by lack of prenatal care or poorer medical care, generally, and to what degree it is caused by poorer nutrition for the pregnant mother and infant and other socioeconomic environmental factors, is unknown." (7, p. 20)

Remembering the infant mortality rate of Sweden in 1975—8.3 compared with the U.S. rate of almost double that rate, 16.1, Myron Wegman in his vital statistics summary commented: "... even the wealthiest of U.S. counties, with far greater availability of physicians and health services than Sweden, cannot match the latter's national record in infant mortality. So, something other than socioeconomic conditions and mere quantity of health services must be involved." (12, p. 681)

G. Maternal Mortality

The maternal mortality rate in the U.S. in 1975 was 12.8 deaths per 100,000 live births. Maternal mortality no longer exerts the strong influence on overall mortality that it once did. For instance, in 1940 the rate was a staggering 376. Dramatic improvements in the rate have occurred since that time. Even in recent years, substantial reductions continue to occur. Maternal mortality decreased 85 percent from 1950 to 1975, and 41 percent from 1970 to 1975. The racial minority reduction in maternal mortality from 1960 to 1975

was 48 percent, compared with 38 percent among whites (see Table 11 and Figure 11).

Nevertheless, the racial differential in maternal mortality is still substantial. The race mortality ratio was 3.19 in 1975, with the rate for whites being compared to 29.0 for racial minorities. Nor has the race differential been dwindling at a fast enough rate over time. In 1965 racial minorities had over three and a half times the maternal mortality experienced by whites, but by 1975 they still had over three times the rate of whites. At this rate, identical mortality rates would not be achieved for another six decades.

While the disparity between the maternal mortality of all racial minorities and the rest of the population has not improved sufficiently in the last ten years or so, the disparity between the rates for American Indians and the rest of the population has narrowed considerably. In Table 14 and Figure 12, maternal mortality statistics are presented for American Indian and Alaskan Natives combined. The racial mortality ratio of this group to the total population was 1.23 in 1975, compared with 2.01 in 1965. The race mortality ratio of Indians and Alaskans to Whites was 3.02 in 1965, and 1.73 in 1975.

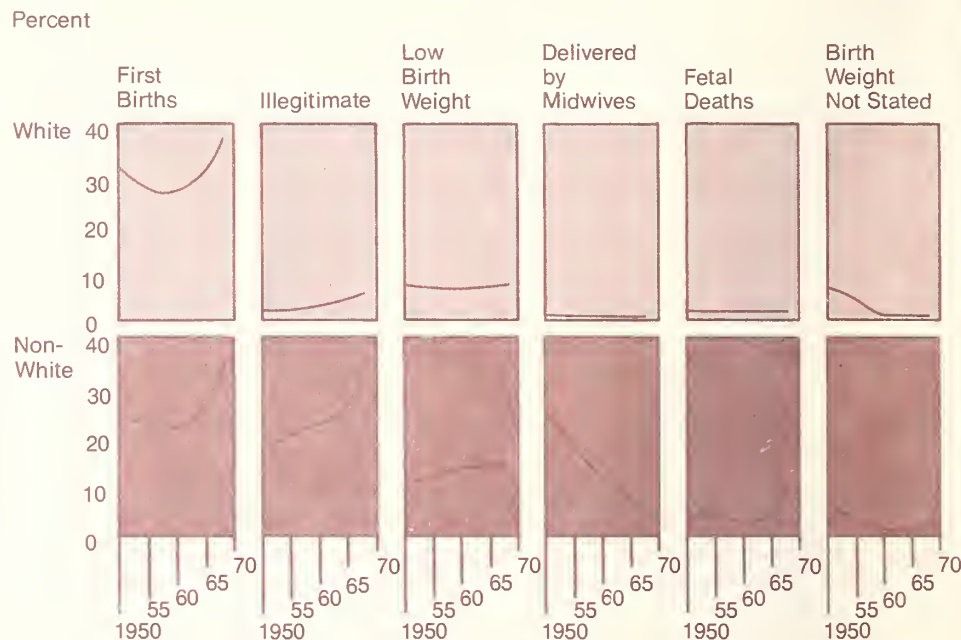
In addition to racial differences, higher maternal mortality rates have been observed among rural dwellers, unmarried women, and women aged 35 and over. The lowest maternal mortality rate in the U.S. is for nonwhites of Oriental origin living on the Pacific Coast (5, p. 51).

In 1963-65, hemorrhages and abortion were tied for first place among the causes of white maternal mortality, closely followed by toxemia and by sepsis. In 1975, sepsis was the leading cause of death followed by toxemia and hemorrhage. Abortion ranked fifth. The primary cause of nonwhite maternal mortality in 1963-65 was toxemia, closely followed by abortion, hemorrhage, sepsis, and ectopic pregnancy, in that order. In 1975 the leading cause among nonwhites was toxemia, followed by ectopic pregnancy,

Birth Characteristics

Change in Low Birth Weight Ratios and Related Characteristics by Race: United States, 1950-68.

Figure 9.

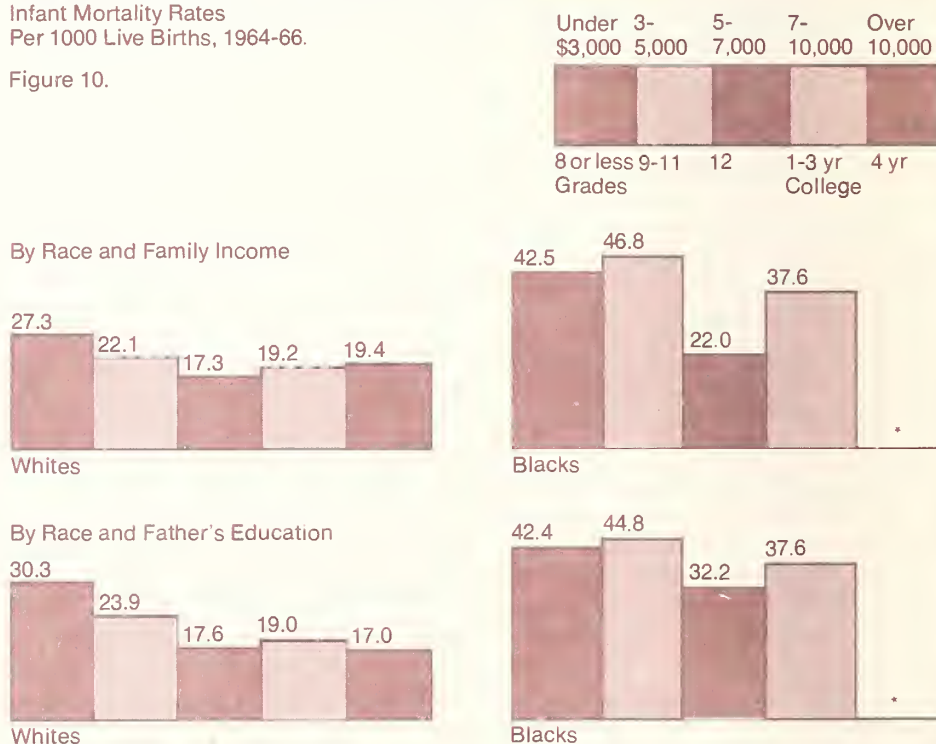


Source: Helen C. Chase, "Trends in Low Birth Weight Ratios, United States and Each State, 1950-1968," U.S. Department of Health, Education, and Welfare, Public Health Service, Health Services and Mental Retardation, Rockville, Maryland, June 1973.

Infant Mortality—Socioeconomic Measures

Infant Mortality Rates
Per 1000 Live Births, 1964-66.

Figure 10.



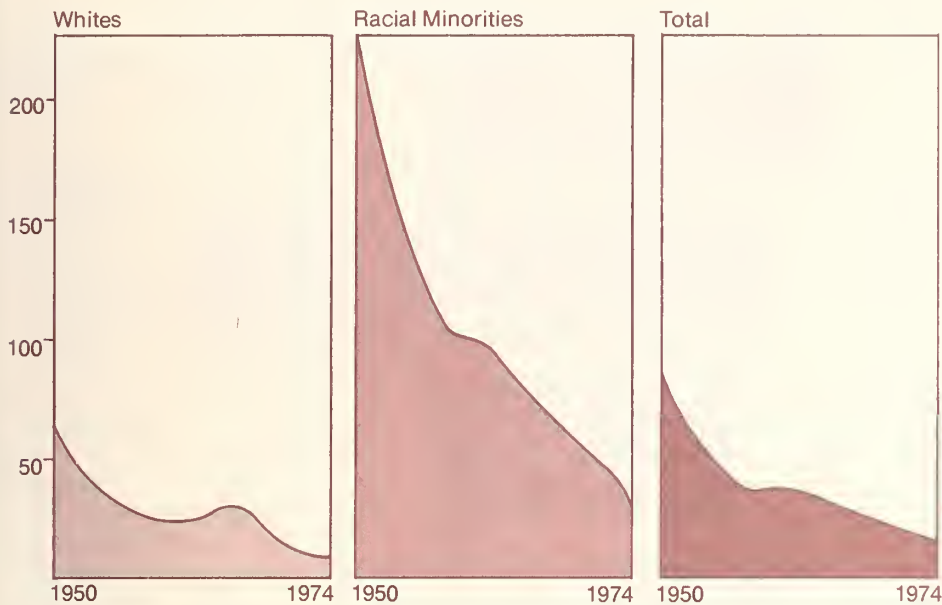
*Data Not Available

Source: U.S.P.H.S., National Center for Health Statistics. Series 22, No. 14.

Maternal Mortality

Maternal Mortality Rates by Race, U. S. 1950-1974.
(Rates per 100,000 Live Births Per Specified Group)

Figure 11.



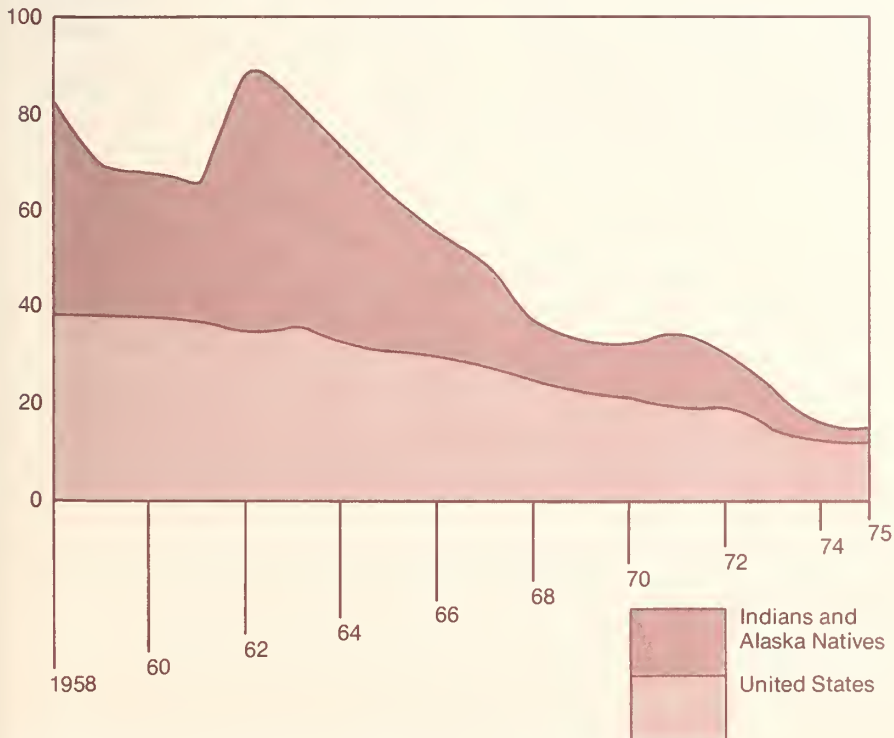
Source: U.S.P.H.S., National Center for Health Statistics, Vital Statistics of the U. S., 1974, Vol. II, Mortality, Part A." In preparation.

Maternal Death Rates

Maternal Death Rates Comparing Indians and Alaska Natives with the United States

Figure 12.

Rate Per 100,000 Live Births



Indian and Alaska Native Rates are Based on 3-Year Moving Average Centered at Year Specified (E.G. 1974 Average = Deaths in 1973-1975.)
U. S. All Races Rates are Single Year.
Source: Trajectory of Indian Health Care.

and sepsis. Abortion ranked fifth. While abortions accounted for 23 percent of all U.S. maternal mortality in 1963-65, they accounted for only 7 percent in 1975.

The increasing legalization of abortions in the U.S. is probably responsible for improvement in maternal mortality from that cause. One study estimated a 60 percent drop in abortion-related maternal deaths in a nine-month period following legalization of abortion. (13) In Figure 13, a striking increase in abortions among all races, but especially among minorities, can be observed. Before legalized abortion in New York, only 1.8 abortions per 1000 live births were recorded as being performed on nonwhites in 1965-1967, compared with 736 per 1000 in 1971-72. Of course these data do not include illegal abortions performed during those periods. Other family planning measures aimed at preventing teenage pregnancies, out of wedlock births, and high parity, will play a part in reducing maternal mortality, particularly among the disadvantaged, in whom a disproportionate share of high risk pregnancies from the above causes occur.

H. Marriages and Divorces

Although marriage and divorce data are the proper domain of vital statistics, they are not direct measures of health status in the same way as other measures included in this chapter. Marital status influences the birth rate, is a risk factor in some disease conditions, and is an economic indicator. Divorce rates are, also, economic indicators, and they are related to the health status of the population to the extent that the dissolution of family life may exert a negative influence on the happiness and health of each family member. In this section, the marriage and divorce rates of the disadvantaged are compared with those of the rest of the population.

Marriages and divorces disaggregated by sex and race from 1950 to 1975 are presented in Table 15. The marriage rate for the total population was at its

highest level in 1950, at 11.1 marriages per 1000 population. It then decreased to 8.5 in 1965, and increased again to 10 in 1975. An increase from 71.8 to 72.8 percent of the male population, who were 18 years and over and married, occurred between 1950 and 1975, while the percent of married females 18 years and over decreased from 70.9 to 66.7 during this period. In a monogamous society, the number of married males in the population, at one point in time, is equal to the number of married females in the population, at that same point in time within a given age range. Although the number of members of both sexes are equal, the proportions of the sexes that are married are not. This is so for two reasons: (a) there are a larger number of married females under the age of 18 who are not included in the usual reporting of data; and (b) there is a much larger number of women in the over 18 age bracket, so that a given number of married women will constitute a smaller proportion of all women than would be the same number as a proportion of all men.

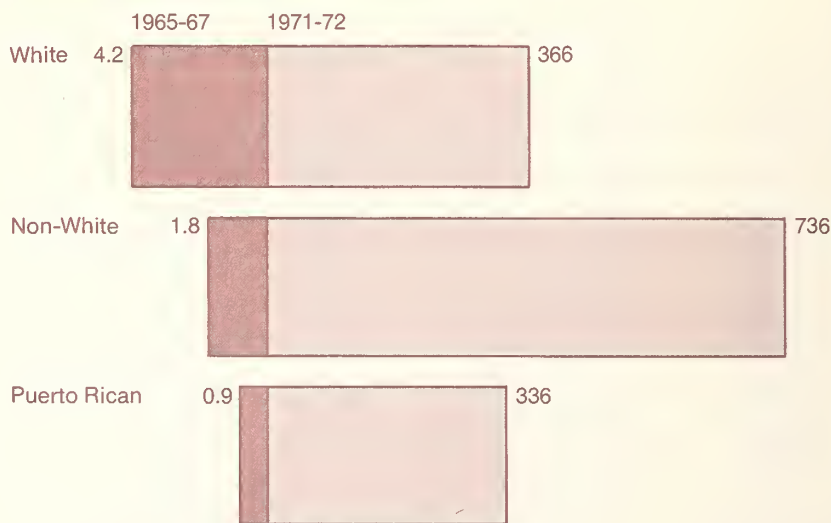
The data in Table 15 indicate that a larger proportion of white males were married in 1975 than racial minority males, 73.9 percent compared with 63.5 percent. Also, a much larger percent of white females, 68 percent, were married in 1975 than nonwhite females, 57.3 percent. The drop from 1960 to 1975, in proportion to the seg-

Abortion

Effect of Liberalized Abortion Law*, by Ethnic Group
(New York City, 1965-67 and 1971-72).

Figure 13.

Abortions per 1000 Live Births



*New York's liberalized abortion law went into effect July 1, 1970.
Source: Tietze, C. and Dawson, D. A., "Induced Abortion: A Factbook," "Reports on Population/Family Planning," No. 14, December 1973, Table 1, p. 11.

ment of the population that were married, was highest among nonwhite females, 8.5 percent (from 66.3 to 57.8). The next highest drop was for nonwhite males, 4.9 percent, then white females, 4.2 percent, and white males, 3.4 percent.

The number of divorces per 1000 population increased from 2.6 in 1950 to 4.8 percent in 1975. The proportion of the population that is divorced is higher among women than men, 5.3 in 1975 compared with 3.7. Women

have, also, experienced a greater increase in annual divorce rates than men since 1950. The percent of divorced racial minority males was higher than that of white males in 1975, 4.6 compared with 3.6. The percent of divorced nonwhite females was, also, greater than the percent of divorced white females, 7.1 compared with 5.0. The group that experienced the greatest increase in the proportion that were divorced from 1960 to 1975 were nonwhite males.

Table 1

Births and Birth Rates: 1940 to 1974

Item	1940	1950	1955	1960	1965	1969	1970 ¹	1971 ¹	1972 ¹	1973 ¹	1974 ¹	1975
Live births	2,559	3,632	4,097	4,258	3,760	3,600	3,731	3,556	3,258	3,137	3,160	
Average annual percent change from prior year shown	² -0.2	+3.6	+2.4	+0.8	-2.5	-1.1	+3.6	-4.7	-8.4	-3.7	+0.7	
White	2,198	3,108	3,485	3,601	3,124	2,994	3,091	2,920	2,656	2,551	2,576	
Black and other	360	524	613	657	636	607	640	636	603	586	584	
Percent of total	14.1	14.4	14.0	15.4	16.9	17.7	17.2	17.9	18.5	18.7	18.5	
Male	1,313	1,863	2,099	2,180	1,927	1,847	1,915	1,823	1,670	1,608	1,622	
Female	1,246	1,768	1,998	2,078	1,833	1,754	1,816	1,733	1,588	1,529	1,538	
Males per 100 females	105.4	105.4	105.1	104.9	105.1	105.3	105.5	105.2	105.1	105.2	105.5	
Birth rate	19.4	24.1	25.9	23.7	19.4	17.8	18.4	17.2	15.6	14.9	14.9	14.8
White	18.6	23.0	23.8	22.7	18.3	16.9	17.4	16.2	14.6	13.9	14.0	13.8
Black and other	26.7	33.3	34.5	32.1	27.6	24.4	25.1	24.7	22.9	21.9	21.4	21.2
Male	23.6	24.9	25.8	24.7	20.3	18.8	19.4	18.1	16.5	15.7	15.8	
Female	21.5	23.3	23.9	22.8	18.6	17.0	17.4	16.4	14.9	14.2	14.2	
Fertility rate (births per 1,000 women, 15-44 years old)	79.9	106.2	118.3	118.0	96.0	86.5	87.9	81.8	73.4	69.2	68.4	66.7
Plural births per 1,000 live births	20.8	20.9	21.1	20.4	20.1	(NA)	(NA)	18.1	18.4	18.4	18.6	

[Births in thousands, except as indicated; rates are per 1,000 population. Prior to 1960, excludes Alaska and Hawaii. For 1940-1955 adjusted for underregistration; thereafter, registered births. For population bases used to derive these data, see text, p. 49. See also *Historical Statistics, Colonial Times to 1970*, series B 1 and B 5-7]

NA Not available.

¹Excludes births to nonresidents of U.S. ²Average annual percent change from 1930 to 1940.

Source: U.S. National Center for Health Statistics, *Vital Statistics of the United States*, annual, and Department of Health, Education, and Welfare, *Monthly Vital Statistics Report, Final Mortality Statistics*, 1975, Vol. 25, No. 10, December 30, 1976.

Table 2

Total Fertility Rate and Intrinsic Rate of Natural Increase, by Race: 1940 to 1974

Period of Year	Total Fertility Rate			Intrinsic Rate of Natural Increase		
	Total	White	Black and other	Total	White	Black and other
Annual average:						
1940-1944	2,523	2,460	3,010	4.6	3.9	9.8
1945-1949	2,985	2,916	3,485	11.7	10.9	17.2
1950-1954	3,337	3,221	4,185	16.8	15.4	25.7
1955-1959	3,690	3,549	4,716	21.1	19.5	30.7
1960-1964	3,459	¹ 3,331	¹ 4,375	18.6	¹ 17.1	¹ 27.7
1965-1969	2,636	2,516	3,447	8.2	6.4	18.6
1965	2,928	2,790	3,891	12.1	10.3	23.1
1966	2,736	2,609	3,615	9.7	7.9	20.4
1967	2,573	2,453	3,385	7.4	5.6	18.2
1968	2,477	2,368	3,197	5.9	4.2	16.0
1969	2,465	2,360	3,148	5.7	4.1	15.4
1970	2,480	2,385	3,067	6.0	4.5	14.4
1971	2,275	2,168	2,933	2.8	1.0	12.8
1972	2,022	1,919	2,651	-1.7	-3.7	8.9
1973	1,896	1,798	2,474	-4.2	-6.1	6.1
1974	1,857	1,768	2,377	-5.0	-6.8	4.6

[Excludes Alaska prior to 1959 and Hawaii prior to 1960. Prior to 1960, based on births adjusted for underregistration; beginning 1960, on registered births. The *total fertility rate* is the number of births that 1,000 women would have in their lifetime. If, at each year of age, they experienced the birth rates occurring in the specified year. A total fertility rate of 2,110 represents "replacement level" fertility for the total population under current mortality conditions. The *intrinsic rate of natural increase* is the rate that would eventually prevail if a population were to experience, at each year of age the birth rates and death rates occurring in the specified year and if these rates remained unchanged over a long period of time. Minus sign (-) denotes decrease. See also *Historical Statistics, Colonial Times to 1970*, series B 11.]

¹Figures by race exclude data for residents of New Jersey for 1962 and 1963.

Source: U.S. National Center for Health Statistics, *Vital Statistics of the United States*, annual.

Table 3

Unwanted Fertility: 1973

Characteristics	Women (1,000)	Births			Births per Woman		
		Live births ¹ (1,000)	Unwanted ² Number (1,000)	Percent of total	Total	Un- wanted births ²	If unwanted births were averted
Total women	31,018	68,184	9,897	14.5	2.20	.32	1.88
Race: Black	3,692	9,984	3,235	32.4	2.70	.88	1.83
White and other	27,326	58,201	6,662	11.4	2.13	.24	1.89
Education: Less than high school	2,839	9,123	1,757	19.3	3.21	.62	2.60
High school: 1-3 years	6,202	16,884	3,361	19.9	2.72	.54	2.18
4 years	14,599	29,917	3,613	12.1	2.05	.25	1.80
College: 1-3 years	4,220	7,585	781	10.3	1.80	.19	1.61
4 years or more	3,159	4,675	386	8.3	1.48	.12	1.30
Currently married women	26,646	57,524	7,082	12.3	2.16	.27	1.89
Race: Black	2,081	5,561	1,575	28.3	2.67	.76	1.92
White and other	24,565	51,963	5,507	10.6	2.12	.22	1.89
Education: Less than high school	2,146	6,846	999	14.6	3.19	.47	2.73
High school: 1-3 years	4,956	13,274	2,324	17.5	2.68	.47	2.21
4 years	12,904	26,494	2,821	10.6	2.05	.22	1.83
College: 1-3 years	3,753	6,722	635	9.4	1.79	.17	1.62
4 years or more	2,888	4,187	302	7.2	1.45	.10	1.35

(Preliminary. Data represent the birth experience to date of all women 15-44 years old who have been married or are single with children of their own in the household. From the 1973 National Survey of Family Growth; based on a multi-stage area probability sample. Data are subject to sampling variability)

¹Multiple births counted only once. ²All births which mothers report as "not wanted" or "probably not wanted" at time of becoming pregnant; included are some births that became unwanted after pregnancy began, or possibly after birth, according to mothers' answers to later questions in the interview.

Table 4

Contraceptive Status of Currently Married Women 15 to 44 Years Old, by Age and Race: 1973 (Prel.)

Contraceptive Use Method		All Races				White				Black			
		Total	15-24	25-34	35-44	Total	15-24	25-34	35-44	Total	15-24	25-34	35-44
Married women	1,000	26,646	5,977	11,311	9,358	24,249	5,384	10,347 ¹	8,518	2,081	547	819	715
Percent		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not using contraception ¹		30.4	31.3	27.1	33.8	29.5	30.9	26.3	32.4	40.0	33.9	36.9	48.2
Using contraception		69.6	68.8	72.9	66.2	70.5	69.1	73.7	67.6	60.0	66.1	63.1	51.8
Pill		25.1	44.9	25.7	11.7	25.1	44.5	25.8	11.9	26.3	48.6	27.1	8.2
Condom		9.4	5.7	9.7	11.4	9.9	6.1	10.1	12.1	3.2	1.4	3.1	4.7
Wife sterilized		8.6	2.5	8.2	12.9	8.2	2.3	8.1	11.9	13.6	4.2	10.7	24.1
Husband sterilized		7.8	1.5	8.2	11.4	8.4	1.7	8.6	12.3	1.0	0.1	1.8	0.9
IUD		6.7	7.2	9.1	3.5	6.6	7.2	8.9	3.5	7.7	7.9	10.7	4.0
Foam		3.5	2.7	4.4	2.9	3.5	2.8	4.5	2.9	3.0	1.7	4.2	2.7
Rhythm		2.8	1.3	2.3	4.3	2.9	1.3	2.3	4.6	0.8	1.0	0.7	0.6
Diaphragm		2.4	1.1	2.3	3.3	2.5	1.2	2.4	3.5	1.2	0.1	1.8	1.4
Withdrawal		1.5	0.8	1.3	2.1	1.6	0.8	1.4	2.3	0.4	0.2	0.2	0.8
Other		1.9	1.2	1.6	2.6	1.9	1.2	1.6	2.5	2.8	1.0	2.8	4.3

[Status as of time of interview. From the 1973 National Survey of Family Growth; see headnote, table 79]

¹Includes women pregnant, post partum, and sterile for noncontraceptive reasons.

Source: U.S. National Center for Health Statistics, unpublished data.

Table 5

Age-adjusted death rates by color and sex: Death-registration States, selected years 1900-1930, and United States selected years 1940-73

Area and year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Rates per 1,000 population									
UNITED STATES									
1975	6.4	8.5	4.7	6.1	8.1	4.5	8.5	11.0	6.5
1974	6.7	8.8	4.9	6.4	8.4	4.7	9.0	11.5	6.9
1973	6.9	9.1	5.1	6.6	8.7	4.8	9.5	12.1	7.4
1972	7.0	9.2	5.2	6.7	8.8	4.9	9.7	12.3	7.5
1971	7.0	9.2	5.2	6.7	8.8	4.9	9.6	12.1	7.5
1970 ¹	7.1	9.3	5.3	6.8	8.9	5.0	9.8	12.3	7.7
1969	7.3	9.5	5.5	6.9	9.0	5.2	10.5	13.0	8.3
1968	7.5	9.6	5.6	7.1	9.2	5.3	10.8	13.3	8.6
1967	7.3	9.4	5.5	6.9	9.0	5.2	10.2	12.4	8.2
1966	7.5	9.5	5.7	7.1	9.2	5.3	10.5	12.7	8.6
1965	7.4	9.4	5.7	7.1	9.1	5.3	10.3	12.4	8.5
1960	7.6	9.5	5.9	7.3	9.2	5.6	10.5	12.1	8.9
1955	7.7	9.3	6.1	7.4	9.1	5.7	10.4	11.9	9.1
1950	8.4	10.0	6.9	8.0	9.6	6.5	12.3	13.6	10.9
1945	9.5	11.1	8.0	9.1	10.7	7.5	13.1	14.5	11.9
1940	10.8	12.1	9.4	10.2	11.6	8.8	16.3	17.6	15.0
DEATH-REGISTRATION STATES ²									
1930	12.5	13.5	11.3	11.7	12.8	10.6	20.1	21.0	19.2
1920	14.2	14.7	13.8	13.7	14.2	13.1	20.6	20.4	21.0
1910	15.8	16.9	14.6	15.6	16.7	14.4	24.1	24.8	23.2
1900	17.8	18.6	17.0	17.6	18.4	16.8	27.8	28.7	27.1

(Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940.)

¹Excludes deaths of nonresidents of the United States.²Increased in number from 10 States and the District of Columbia in 1900 to the entire coterminous United States in 1933.

Source: National Center for Health Statistics: "Vital Statistics of the United States", 1973, Vol. II, Mortality, Part A. (In press.) and Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics, 1974, Vol. 24, No. 11, 1975, Vol. 25, No. 11.

Table 6

U.S. Mortality Index 1959-61 for Racial/Ethnic Minorities and Whites by Median Family Income

Mortality Index

Race	U.S. 1959-1961	Median Family Income, 1959
Japanese	0.68 (lowest Mortality)	\$6,842
White	0.97	\$5,893
Chinese	1.15	\$6,207
American Indian	1.28	\$2,728
Black	1.32 (highest mortality)	\$3,047

Source: Kitagawa, Evelyn M. and Philip M. Hauser, "Differential Mortality in the U.S.: A Study in Socioeconomic Epidemiology" Harvard U. Press, Cambridge, Mass., 1973.

Table 7

Age-Adjusted Death Rates for 10 Leading Causes of Death by Color, U.S. 1973-1975

1975 Rank	Year	Total Rate	Percent Change	White Rate	Percent Change	All Others Rate	Percent Change	Differential* 1975
1. Disease of heart (340-348, 402, 404, 410-429)	73	244.4		239.9		279.8		
	74	232.7		228.8		262.8		
	75	220.5	-9.8	217.2	-9.5	245.2	-12.4	1.13
2. Malignant Neoplasm (140-209)	73	130.7		127.7		156.4		
	74	131.8		129.0		156.6		
	75	130.9	+ .2	128.1	+ .3	155.0	-.9	1.21
3. Cerebrovascular diseases (140-438)	73	63.7		59.6		99.7		
	74	59.9		56.4		90.9		
	75	54.5	-14.4	51.3	-13.9	82.0	-17.8	1.60
4. Accidents (E800-E949)	73	51.7		49.5		67.5		
	74	46.0		44.3		58.5		
	75	44.8	-13.3	43.1	-12.9	56.9	-15.7	1.32
5. Influenza and Pneumonia (470-474, 480, 486)	73	20.1		18.5		31.4		
	74	16.9		15.7		25.4		
	75	16.6	-17.4	15.6	-15.7	23.9	-23.9	1.53
6. Diabetes Mellitus (250)	73	13.2		11.8		25.3		
	74	12.5		11.4		23.4		
	75	11.6	-12.1	10.4	-11.9	21.7	-14.2	2.09
7. Cirrhosis of Liver	73	15.0		13.7		25.3		
	74	14.8		13.4		25.0		
	75	13.8	-8.0	12.6	-8.0	23.1	-8.7	1.83
8. Arteriosclerosis (440)	73	8.0		8.0		7.8		
	74	7.6		7.6		7.3		
	75	6.6	-17.5	6.6	-17.5	6.1	-21.8	.92
9. Suicide (E950-E954)	73	12.0		12.6		7.2		
	74	12.2		12.8		7.2		
	75	12.6	+5.0	13.3	+5.6	7.5	+4.2	56
10. Certain Causes of Mortality in Early Infancy (760-769.2, 769.4-772, 774, 778)	73	14.5		12.1		31.0		
	74	13.6		11.3		29.0		
	75	12.5	-13.8	10.2	-15.7	27.8	-10.3	2.73

*(Ratios All Other to White)

Sources: Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Final Mortality Statistics, 1973, Vol. 23, No. 11, 1974, Vol. 24, No. 11, 1975, Vol. 25, No. 11

Table 8

Expectation of Life at Birth: 1920 to 1974

Year	Total			White			Black and Other		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
1920	54.1	53.6	54.6	54.9	54.4	55.6	45.3	45.5	45.2
1930	59.7	58.1	61.6	61.4	59.7	63.5	48.1	47.3	49.2
1940	62.9	60.8	65.2	64.2	62.1	66.6	53.1	51.5	54.9
1950	68.2	65.6	71.1	69.1	66.5	72.2	60.8	59.1	62.9
1955	69.6	66.7	72.8	70.5	67.4	73.7	63.7	61.4	66.1
1960	69.7	66.6	73.1	70.6	67.4	74.1	63.6	61.1	66.3
1965	70.2	66.8	73.7	71.0	67.6	74.7	64.1	61.1	67.4
1970	70.9	67.1	74.3	71.7	68.0	75.6	65.3	61.3	69.4
1971	71.1	67.4	75.0	72.0	68.3	75.8	65.6	61.6	69.7
1972	71.1	67.4	75.1	72.0	68.3	75.9	65.6	61.5	66.9
1973	71.3	67.6	75.3	72.2	68.4	76.1	65.9	61.9	70.1
1974	71.9	68.2	75.9	72.7	68.9	76.6	67.0	62.9	71.2
1975	72.5	68.7	76.5	73.2	69.4	77.2	67.9	63.6	72.3

(In years. Prior to 1960, excludes Alaska and Hawaii. Data prior to 1930 for death-registration States only; see text, p. 49. See also *Historical Statistics, Colonial Times to 1970*, series B 107-115)

Source: U.S. National Center for Health Statistics, *Vital Statistics of the United States*, annual.

Table 9

Life Expectancy for the White Population By Sex and Years of School Completed, U.S. 1960

Sex and Years of School Completed	Average Years of Life Remaining at the Designated Age			Sex and Years of School Completed	Average Years of Life Remaining at the Designated Age		
	25 Years	45 Years	65 Years		25 Years	45 Years	65 Years
White Males				White Females			
0-4 Years	43.9	26.2	12.7	0-4 Years	46.8	30.0	14.8
5-7 Years	43.6	26.7	12.9	5-7 Years	50.5	32.1	16.0
8 Years	44.8	27.1	13.0	8 Years	51.1	32.4	16.2
High School, 1-3 Years	45.6	27.6	13.5	High School, 1-3 Years	53.4	34.8	18.0
High School, 4 Years	46.0	27.5	12.9	High School, 4 Years	52.2	33.2	16.3
College, 1 Year or More	47.1	28.4	13.1	College, 1 Year or More	56.4	37.7	20.8

Source: Kitagawa, Evelyn M. and Philip Hauser. *Differential Mortality in United States: A Study in Socioeconomic Epidemiology*. Harvard University Press, Cambridge, 1973.

Table 10

Life Expectancy by Race, Sex, and Geographical Division, U.S. 1969-1971

Division and State	Life Expectancy			Life Expect. Rank	Poverty Rank ¹	Racial Minority Rank ¹
	Both Sexes	Male	Female			
New England						
Maine	70.93	67.24	74.85	21	31	3
New Hampshire	71.23	67.48	75.19	20	4	2
Vermont	71.64	67.76	75.77	18	24	1
Massachusetts	71.83	68.12	75.45	15	3	14
Rhode Island	71.90	68.31	75.48	13	17	12
Connecticut	72.48	69.04	75.95	8	1	22
Mid. Atlantic						
New York	70.55	66.95	74.15	31	19	35
New Jersey	70.93	67.52	74.38	22	2	32
Pennsylvania	70.43	66.90	74.06	33	14	25
East N. Central						
Ohio	70.82	67.25	74.55	25	10	27
Indiana	70.88	67.23	74.22	24	8	21
Illinois	70.14	66.48	73.96	37	13	36
Michigan	70.63	67.09	74.48	29	7	33
Wisconsin	72.48	69.15	76.04	9	9	13
West N. Central						
Minnesota	72.96	69.38	76.80	2	15	5
Iowa	72.56	68.83	76.50	7	22	4
Missouri	70.69	66.88	74.66	26	32	29
North Dakota	72.79	69.23	77.01	4	35	10
South Dakota	72.08	68.49	76.19	11	38	19
Nebraska	72.60	68.85	76.61	5	28	11
Kansas	72.58	68.83	76.55	6	27	20
South Atlantic						
Delaware	70.06	66.29	74.07	41	16	37
Maryland	70.22	66.40	74.17	36	11	40
District of Col.	65.74	60.92	70.52	51	37	51
Virginia	70.08	66.26	74.17	40	34	42
West Virginia	69.48	65.56	73.74	42	44	15
North Carolina	69.21	64.94	73.78	44	41	44
South Carolina	67.96	63.85	72.29	50	47	48
Georgia	68.54	64.27	73.01	48	42	45
Florida	70.66	66.61	74.96	27	36	38
East S. Central						
Kentucky	70.10	66.22	74.34	39	46	23
Tennessee	70.11	66.15	74.26	38	43	39
Alabama	69.05	64.90	73.41	45	48	45
Mississippi	68.09	64.06	72.40	49	51	49
West S. Central						
Arkansas	70.66	66.68	74.97	27	50	41
Louisiana	68.76	64.85	72.88	47	49	47
Oklahoma	71.42	67.40	75.70	19	40	30
Texas	70.90	67.05	74.99	23	39	34
Mountain						
Montana	70.56	66.73	75.08	30	30	17
Idaho	71.87	68.20	76.10	14	29	6
Wyoming	70.29	66.19	75.19	35	23	9
Colorado	72.06	68.40	75.43	12	25	16
New Mexico	70.32	66.51	74.51	34	45	28
Arizona	70.55	66.57	75.04	31	33	26
Utah	72.90	69.49	76.55	3	20	8
Nevada	69.03	65.60	73.32	46	5	24
Pacific						
Washington	71.72	68.07	75.78	16	12	18
Oregon	72.13	68.43	76.20	10	21	7
California	71.71	68.19	75.37	17	18	31
Alaska	69.31	66.05	74.03	43	26	43
Hawaii	73.60	71.02	76.79	1	6	50
United States	70.75	69.04	74.64			

¹ Rank of 50 has the greatest poverty or percent racial minority rate

Source: U.S.P.H.S., National Center for Health Statistics, U.S. Decennial Life Tables for 1969-71, Vol. II, No. 1-151, State Life Tables, 1969-71

Table 11

Infant, Maternal, Fetal, and Neonatal Death Rates, by Race: 1940 to 1974

Item	1940	1950	1960	1965	1967	1968	1969	1970 ¹	1971 ¹	1972 ¹	1973 ¹	1974 ¹	1975
Infant deaths ²	47.0	29.2	26.0	24.7	22.4	21.8	20.9	20.0	19.1	18.5	17.7	16.7	16.1
White	43.2	26.8	22.9	21.5	19.7	19.2	18.4	17.8	17.1	16.4	15.8	14.8	14.2
Black and other	73.8	44.5	43.2	40.3	35.9	34.5	32.9	30.9	28.5	27.7	26.2	24.9	24.2
Maternal deaths ³	376.0	83.3	37.1	31.6	28.0	24.5	22.2	21.5	18.8	18.8	15.2	14.6	12.8
White	319.8	61.1	26.0	21.0	19.5	16.6	15.5	14.4	13.0	14.3	10.7	10.0	9.1
Black and other	773.5	221.6	97.9	83.7	69.5	63.6	55.7	55.9	45.3	38.5	34.6	35.1	29.0
Fetal deaths ⁴	(NA)	19.2	16.1	16.2	15.6	15.8	14.1	14.2	13.4	12.7	12.2	11.5	
White	(NA)	17.1	14.1	13.9	13.5	13.8	12.4	12.4	11.8	11.2	10.8	10.2	
Black and other	(NA)	32.5	26.8	27.2	25.8	25.6	22.5	22.6	21.2	19.5	18.6	17.0	
Neonatal deaths ⁵	28.8	20.5	18.7	17.7	16.5	16.1	15.6	15.1	14.2	13.6	13.0	12.3	11.6
White	27.2	19.4	17.2	16.1	15.0	14.7	14.2	13.8	13.0	12.4	11.8	11.1	10.4
Black and other	39.7	27.5	26.9	25.4	23.8	23.0	22.5	21.4	19.6	19.2	17.9	17.2	16.8

[Deaths per 1,000 live births, except as noted. Prior to 1960, excludes Alaska and Hawaii. See also *Historical Statistics, Colonial Times to 1970*, series B 136-147]

NA Not available. ¹Excludes deaths of nonresidents of U.S. For 1972, based on a 50-percent sample of deaths. ²Represents deaths of infants under 1 year old, exclusive of fetal deaths.

³Per 100,000 live births from deliveries and complications of pregnancy, childbirth, and the puerperium. For 1960-1965, deaths are classified according to seventh revision of *International Lists of Diseases and Causes of Death*; thereafter according to eighth revision. See text, p. 49.

⁴Includes only fetal deaths (stillbirths) for which period of gestation was 20 weeks (or 5 months) or was not stated. ⁵Represents deaths of infants under 28 days old, exclusive of fetal deaths.

Source: U.S. National Center for Health Statistics, *Vital Statistics of the United States*, annual.

Table 12

Infant Deaths and Death Rates

Indian and Alaskan Natives in 25 Reservation States and U.S. All Races (All States)

Calendar Years 1955-1975

Rates per 1,000 Live Births

Year	Indian and Alaskan Native		Indian		Alaskan Native		U.S. All Races	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1975	464	18.2	430	18.1	34	19.3	50,700 ¹	16.1 ¹
1974	455	18.7	409	18.1	46	27.9	52,776	16.7
1973	463	19.5	421	19.1	42	25.1	55,581	17.7
1972	497	20.9	465	21.0	31	19.4	60,182	18.5
1971	560	23.5	513	23.2	47	27.4	67,981	19.1
1970	537	23.6	493	23.4	44	26.7	74,667	20.0
1969	579	26.8	533	26.6	46	30.3	75,073	20.9
1968	668	30.9	606	30.2	62	40.4	76,263	21.8
1967	666	32.2	571	30.1	95	55.6	79,028	22.4
1966	822	39.0	722	37.7	100	51.4	85,516	23.7
1965	872	39.0	740	36.4	132	65.4	92,866	24.7
1964	856	37.6	747	35.9	109	54.8	99,783	24.8
1963	972	43.6	864	42.9	108	50.7	103,390	25.2
1962	967	44.2	827	41.8	140	66.8	105,479	25.3
1961	961	44.4	827	42.3	134	64.0	107,956	25.3
1960	1,064	50.3	914	47.6	150	76.3	110,873	26.0
1959	1,016	49.5	870	46.7	146	76.7	112,008	26.4
1958	1,123	58.0	989	56.7	134	69.0	113,789	27.1
1957	1,136	60.4	989	58.2	147	80.2	112,094	26.3
1956	1,066	59.4	900	56.1	166	87.0	108,183	26.0
1955	1,065	62.5	936	61.2	129	74.8	106,903	26.4

¹Provisional—Monthly Vital Statistics Report, NCHS, Vol. 23, No. 13.

Source: Trajectory of Indian Health Care Vital Events Branch OPS/DRC/IHS November 18, 1976.

Table 13

Out of Wedlock Live Births, by Race and Age of Mother: 1950 to 1974

Race and Age		1950	1955	1960	1965	1970 ¹	1971 ¹	1972 ¹	1973 ¹	1974 ¹
Total number	1,000	141.6	183.3	224.3	291.2	² 398.7	401.4	403.2	407.3	418.1
Percent of all births ²		3.9	4.5	5.3	7.7	10.7	11.3	12.4	13.0	13.2
Rate ³		14.1	19.3	21.6	23.5	26.4	25.6	24.9	24.5	24.1
White		6.1	7.9	9.2	11.6	13.8	12.5	12.0	11.9	11.8
Black and other		71.2	87.2	98.3	97.6	89.9	90.6	86.9	84.2	81.5
Rate per 1,000 live births		39.8	45.3	52.7	77.4	106.9	112.9	123.7	129.8	132.3
Births by race of mother:										
White	1,000	53.5	64.2	82.5	123.7	175.1	163.8	160.5	163.0	168.5
Black and other	1,000	88.1	119.2	141.8	167.5	223.6	237.5	242.7	244.3	249.6
Percent of total		62.2	65.0	63.2	57.5	56.1	59.2	60.2	60.0	59.7
Age of mother:										
Under 15 years	1,000	3.2	3.9	4.6	6.1	9.5	9.5	9.9	10.9	10.6
15-19 years	1,000	56.0	68.9	87.1	123.1	190.4	194.1	202.3	204.9	210.8
20-24 years	1,000	43.1	55.7	68.0	90.7	126.7	125.2	119.6	119.1	122.7
25-29 years	1,000	20.9	28.0	32.1	36.8	40.6	40.9	41.2	43.1	44.9
30-34 years	1,000	10.8	16.1	18.9	19.6	19.1	19.3	19.0	18.5	18.6
35-39 years	1,000	6.0	8.3	10.6	11.4	9.4	9.4	8.6	8.2	8.2
40 years and over	1,000	1.7	2.4	3.0	3.7	3.0	3.0	2.7	2.6	2.3

[Prior to 1960, excludes Alaska and Hawaii. Includes estimates for States in which legitimacy data were not reported. No estimates included for misstatements on birth records or failures to register births. See also *Historical Statistics, Colonial Times to 1970*, series B 28-35]

¹Excludes births to nonresidents of U.S.

²Through 1955, based on data adjusted for underregistration; thereafter, registered births. For total birth figures used to derive these data, see table 68.

³Rate per 1,000 unmarried (never married, widowed, and divorced) women aged 15-44 years enumerated as of April 1 for census years and estimated as of July 1 for all other years.

Source: U.S. National Center for Health Statistics, *Vital Statistics of the United States*, annual.

Table 14

Maternal Deaths and Death Rates

Indians and Alaskan Natives in 25 Reservation States and U.S. All Races (All States)

Calendar Years 1958-1975

Year	Number		Rate Per 100,000 Live Births	
	Indian and Alaskan Natives	All Races	Indian and Alaskan Natives ¹	All Races
1975	4	340	15.7	12.8
1974	4	462	16.3	14.6
1973	4	477	23.7	15.2
1972	9	612	30.8	18.8
1971	9	668	35.0	18.8
1970	7	803	32.3	21.5
1969	6	801	32.8	22.2
1968	9	859	37.0	24.5
1967	7	987	49.1	28.0
1966	16	1,049	54.6	29.1
1965	12	1,189	63.4	31.6
1964	14	1,343	74.2	33.3
1963	24	1,466	83.7	35.8
1962	18	1,465	89.7	35.2
1961	17	1,573	66.5	36.9
1960	8	1,579	67.9	37.1
1959	18	1,588	68.8	37.4
1958	16	1,581	82.6	37.6

¹Indian and Alaskan Native rates are three-year average death rates 1958 through 1974.

Source: Trajectory of Indian Health Care Vital Events Branch OPS/DRC/IHS November 18, 1976.

Table 15

Marriages and Divorces: 1950 to 1975

Marriage and Divorce	1950	1955	1960	1965	1970	1972	1973	1974	1975
Marriages									
Total 1,000	1,667	1,531	1,523	1,800	2,159	2,282	2,284	2,230	2,126
Rate per 1,000 population	11.1	9.3	8.5	9.3	10.6	11.0	10.9	10.5	10.0
Rate per 1,000 unmarried women:									
15-44 years old	166.4	161.1	148.0	144.3	140.2	146.3	137.3	128.4	(NA)
15 years old and over	90.2	80.9	73.5	75.0	76.5	77.9	76.0	72.0	(NA)
First marriage of bride ¹									
1,000	(NA)	(NA)	664	1,043	1,252	1,364	1,331	1,265	(NA)
Rate per 1,000 single women:									
14 years old and over	(NA)	(NA)	87.5	84.4	82.9	84.5	81.0	74.8	(NA)
18-19 years	(NA)	(NA)	208.4	166.9	151.4	151.9	144.8	133.5	(NA)
20-24 years	(NA)	(NA)	263.9	237.3	220.1	192.9	177.1	159.5	(NA)
25-44 years	(NA)	(NA)	(NA)	96.4	82.5	94.2	94.8	85.7	(NA)
45-64 years	(NA)	(NA)	(NA)	9.0	8.8	10.8	11.3	9.6	(NA)
Median age at first marriage: ^{2 3}									
Male years	22.8	22.6	22.8	22.8	23.2	23.3	23.2	22.5	23.5
Female years	20.3	20.2	20.3	20.6	20.8	20.9	21.0	20.6	21.1
Remarriages of bride ¹ 1,000	(NA)	(NA)	197	305	393	457	488	494	(NA)
Rate per 1,000 widowed and divorced:									
14 years old and over	(NA)	(NA)	32.7	33.7	36.6	39.3	40.6	40.0	(NA)
14-24 years	(NA)	(NA)	407.7	471.0	317.6	398.0	391.2	332.1	(NA)
25-44 years	(NA)	(NA)	(NA)	139.6	142.3	155.3	154.3	147.3	(NA)
45-64 years	(NA)	(NA)	22.0	24.5	24.8	25.4	25.7	24.4	(NA)
Percent married, of population 18 years and over: ²									
Male	71.8	56.7	76.4	76.2	75.0	74.8	74.5	73.7	72.8
White	(NA)	(NA)	77.3	76.9	76.1	75.0	75.9	74.9	73.9
Black and other	(NA)	(NA)	68.4	70.2	65.4	64.8	62.8	63.1	63.5
Female	70.9	71.9	71.6	70.5	68.5	68.5	68.1	67.6	66.7
White	(NA)	(NA)	72.2	70.9	69.3	69.6	69.3	68.8	68.0
Black and other	(NA)	(NA)	66.3	67.6	62.6	60.2	58.5	58.9	57.3
Divorced									
Total 1,000	385	377	393	479	708	845	915	977	1,026
Rate per 1,000 population	2.6	2.3	2.2	2.5	3.5	4.1	4.4	4.6	4.8
Rate per 1,000 married women, 15 years old and over	10.3	9.3	9.2	10.6	14.9	17.0	18.2	19.3	(NA)
Percent divorced, 18 years old and over: ²									
Male	1.8	1.9	2.0	2.5	2.5	2.8	3.0	3.5	3.7
White	(NA)	(NA)	2.0	2.4	2.4	2.7	2.9	3.3	3.6
Black and other	(NA)	(NA)	2.2	3.4	3.4	3.2	4.0	4.8	4.6
Female	2.3	2.4	2.9	3.3	3.9	4.3	4.5	4.9	5.3
White	(NA)	(NA)	2.7	3.1	3.8	4.1	4.3	4.7	5.0
Black and other	(NA)	(NA)	4.8	4.5	4.8	5.9	6.1	6.3	7.1
Rate per 1,000 married, spouse present ²	29	31	35	41	47	52	56	63	69
Male	24	26	28	34	35	38	42	49	54
Female	34	36	42	49	60	66	70	77	84
Median duration of marriage ³									
years	5.3	6.2	7.1	7.2	6.7	6.7	6.6	6.5	(NA)
Children involved per divorce ⁵	(NA)	0.92	1.18	1.32	1.22	1.20	1.17	1.12	(NA)

[Prior to 1960, excludes Alaska and Hawaii. See also *Historical Statistics, Colonial Times to 1970*, series A 158-159 and B 214-220]

NA Not available.

¹Number of States reporting previous marital status: 1900, 33 including New York but excluding New York city; 1965, 38; 1970, 39; and, beginning 1972, 41. Beginning 1965, includes D.C.

²Source: U.S. Bureau of the Census, *Current Population Reports*, series P-20, No. 287.

³Based on sample.

⁴1969 data.

⁵Beginning 1970, based on divorce-registration area frequencies instead of 16 States as for prior years.

Source: Except as noted, U.S. National Center for Health Statistics, *Vital Statistics of the United States*, annual.

References

1. The Nation's Health, May 1977. "Mortality Decline Increasing."
2. Kitagawa, Evelyn M. and Philip Hauser, "Differential Mortality in the United States: A Study in Socioeconomic Epidemiology," Harvard University Press, Cambridge, Massachusetts, 1973.
3. Wegman, Myron E., Annual Summary of Vital Statistics—1975. Pediatrics, Vol. 58, No. 6, December 1976.
4. "The Health of America's Nonwhite Population, Status Report and Future Plans for Dealing with Diseases More Prevalent or Severe in Nonwhites." Department of Health, Education, and Welfare, National Institutes of Health, Office of Program Planning and Evaluation, November 11, 1971. (Unpublished document).
5. Chase, Helen C., Trends in Low Birth Weight Ratios, United States and Each State, 1950-1968. U.S. Department of Health, Education, and Welfare, Public Health Service, Health Services and Mental Health Administration Maternal and Child Health Service, U.S. Government Printing Office, June 1973.
6. Naylor, A.G. and Myrianthopoulos, N.C., The Relationship of Ethnic and Selected Socioeconomic Factors to Human Birth Weight. Ann. Hum. Genet. 31:71-83, 1967.
7. Campbell, Rita Ricardo, Economics of Health and Public Policy, National Levels of Health, American Enterprise Institute for Public Policy Research, December 1971.
8. Beasley, J.D., President's Proposal for Revision in the Social Security System, Hearing, U.S. House of Representatives, Committee on Ways and Means, March-April 1967, Part III, p. 1512.
9. North, A. Frederick, "Why Are Neonatal Mortality Rates Lower in Small Black Infants Than in White Infants in Similar Birth Weight." J. Ped. Vol. 90, No. 5, pp. 809-10, May 1977.
10. North, A. Frederick, "The Influence of Poverty on Maternal and Child Health" in Maternal and Child Health Practices, Problems, Resources and Methods of Delivery, edited by Helen M. Wallace, Charles C. Thomas, Illinois, 1973.
11. Lesser, Arthur, "Trends in Maternal and Child Health" in Maternal and Child Health Practices, Problems, Resources, and Methods of Delivery edited by Helen M. Wallace, Charles C. Thomas, Illinois, 1973.
12. Wegman, Myron E. Annual Summary of Vital Statistics—1973. Pediatrics. Vol. 54, No. 6, December 1974.
13. Hall, Robert E., "Abortion" in Maternal and Child Health Practices, Problems, Resources, and Methods of Delivery edited by Helen M. Wallace, Charles C. Thomas, Illinois, 1973.

List of Tables

Table 1 Births and Birth Rates by Race and Sex and Related Measures, Selected years 1940 to 1975. 43

Table 2 Total Fertility Rate and Intrinsic Rate of Natural Increase by Race, 1940 to 1974 44

Table 3 Unwanted Fertility by Race and Education, 1973 45

Table 4 Contraceptive Status of Currently Married Women 15 to 44 Years Old, by Age and Race 1973 45

Table 5 Age Adjusted Death Rates by Race and Sex, 1935 to 1975 46

Table 6 U.S. Mortality Index 1959-61, for Whites and Racial/Ethnic Minorities and Median Family Income 47

Table 7 Age Adjusted Death Rates for 10 Leading Causes of Death by Color and Sex, U.S., 1973-1975 47

Table 8 Expectation of Life at Birth by Race and Sex, U.S. 1920 to 1974 48

Table 9 Life Expectancy for the White Population by Sex and Years of School Completed, U.S. 1960 48

Table 10 Life Expectancy by Race, Sex and Geographical Division, U.S. 1969-1971 49

Table 11 Infant, Maternal, Fetal, and Neonatal Death Rates, by Race for Selected Years 1940 to 1975 50

Table 12 Infant Deaths and Death Rates, American Indians and Alaskan Natives, 1955-1975 50

Table 13 Out of Wedlock Live Births by Race and Age of Mother for Selected Years 1950 to 1974 51

Table 14 Maternal Deaths and Death Rates for American Indian and Alaskan Natives and for All Races, 1958 to 1975 51

Table 15 Marriages and Divorces by Race and Sex 1950 to 1975 52

List of Figures

Figure 1 Live Births per 1000 Population for Whites and Ethnic/Racial Minorities, 1940 to 1970 32

Figure 2 Age Adjusted Mortality Rates by Race and Sex, 1935 to 1975 33

Figure 3 Mortality Ratios by Level of Family Income (Standardized for Age) for White Family Members 25-64 Years of Age by Sex: U.S. U.S. 1960 34

Figure 4 Years of Life Expectancy at Birth by Race and Sex, U.S. 1900 to 1970 36

Figure 5 Life Expectancy at Birth by Ethnic Racial Group, California, 1959-1961 36

Figure 6 Infant Mortality Rates by Race for Selected Years 1950 to 1975 37

Figure 7 Infant Mortality Rates for Whites and Specified Ethnic/Racial Minorities, for Selected Years, 1950 to 1974 38

Figure 8 Neonatal and Postneonatal Mortality Rates, by Color (U.S.A., 1915-1975) 39

Figure 9 Change in Low Birth Weight Ratios and Related Characteristics by Color: United States, 1950-68 40

Figure 10 Infant Mortality Rates by Race and Family Income and Race and Father's Education, 1966 40

Figure 11 Maternal Mortality Rates by Color, U.S. 1950 to 1970 and 1975 41

Figure 12 Maternal Death Rates, American Indians, Alaskans and Total U.S. for Selected Years 1958 to 1974 41

Figure 13 Abortions per 1000 Live Births Before and After New York's Liberalized Abortion Law, New York City, 1965-76 and 1971-72 42

Chapter IV

Reproductive and Genetic Health

Contents

A. Overview	57
B. Introduction	57
C. Maternity-related Conditions	58
1. Teenage Pregnancy	58
2. Out of Wedlock Births	59
3. Maternal Mortality	60
4. Low Birth Weight	61
5. Prenatal Care	62
6. Abortion	63
7. Infant Mortality	64
D. Contraception	66
1. Contraceptive Behavior	66
2. Utilization of Family Planning Services	69
E. Venereal Disease	69
F. Mental Retardation	69
G. Genetic Health	70
References	75
List of Tables	77
List of Figures	77

Chapter IV

Reproductive and Genetic Health

A. Overview

For as long as data have been available, nonwhites have had higher birth rates than whites. They have, also, had a higher share of maternity-related and other reproductive health problems.

Teenage pregnancy and out of wedlock births are two health problems which have increased over the past decade, and they have negatively affected maternal and child health among whites, as well as nonwhites. With respect to teenage birth rates, the nonwhite rate has been approximately twice as high as the white rate, and in the early teens the differential is even greater. The birth rate of white girls ages 14 and 15 has increased recently, however, while the birth rate of nonwhite girls of the same age has not. Out of wedlock birth rates for both whites and nonwhites, also, rose before 1965; but since then nonwhites have experienced a decline in babies born out of wedlock, while the white ratio has continued to rise. The result has been a narrowing of the racial disparity from 1965 to 1975. The increase in out of wedlock births among whites has been especially great in the 15-19 age group.

While low birth weight increased as a problem for nonwhites between 1950 and 1968, it remained steady for whites during the same period. Only since 1968 did the ratio of nonwhite underweight infants begin to decline. The white ratio, also, decreased however, resulting in a broader racial/ethnic disparity in 1975 than in 1968.

Reductions in other maternity-related health problems, during the past few decades, have reflected improvements in the maternal and child health status of white, as well as nonwhite, women.

Rates in maternal mortality and infant mortality have declined considerably since the 1930's. Although the racial/ethnic disparities in maternal and infant mortality narrowed over the years, nonwhites still have three times as high maternal death rate and a twice as high infant mortality rate as whites. With both measures, the minorities are one generation behind the rest of the population.

Another indicator of maternal health, which, also, shows large differences between minority and non-minority women, is in the utilization of prenatal care. In 1973, more than three times as many white women as black women who gave birth had received prenatal care. White women were, also, more likely than nonwhite women to begin their prenatal visits during the first trimester of their pregnancy.

Over a long period of time, black women have been less likely than white women to have abortions induced. Liberalization of abortion laws and changes in attitudes toward abortion have led to increased number of black women seeking abortions. Although the abortion ratio has increased for white women as well, it has not changed proportionately as much as it has for nonwhites. In 1975, nonwhite women had almost 200 more abortions than white women per 1000 live births.

Also, birth control has become more commonly practiced among blacks since the 60's. Not only has the proportion of blacks using any contraception increased, there has, also, been a rise in the use of the most effective birth control methods. In 1973, it was more common for whites than for blacks to use the less effective devices, but blacks were more likely than whites to use no contraceptives at all.

The growing use of contraception among blacks does not appear to be reflected in their visits to family planning clinics; however, their proportion of patients at Planned Parenthood clinics has declined in recent years. Unless these clinics do not constitute a majority of family planning clinics throughout the country, no explanation for this finding can be determined.

No data since 1970 on the incidence of venereal disease among whites and nonwhites are available. Figures from that year showed sizable racial differences, with the white segment of the population having lower rates. Local data from Allegheny County, Pennsylvania, from 1976, pointed to similar racial disparities.

Mental retardation is associated with maternal and child health, primarily, because of its relationship to nutrition and prematurity. This association is demonstrated by the higher prevalence of mental retardation, particularly mild retardation, in the low-income segment of the population, where inadequate maternal nutrition and prematurity are relatively common health problems.

With respect to racial/ethnic differences in prevalence of genetic disorders, some of the most common inherited diseases are linked to specific racial/ethnic groups. Sickle cell anemia affects primarily blacks, while cystic fibrosis occurs mostly among whites. Tay-Sacks is limited to Jews of eastern European origin, thalassemis has a relatively high incidence among people from the Mediterranean countries, and Phenylketonuria (PKU) is more prevalent among people of European descent than among blacks and eastern European Jews.

B. Introduction

Reproductive health problems encompass primarily maternity-related conditions, venereal disease and contraceptive behavior, all of which contribute considerably to the levels of morbidity and mortality in the U.S. Cancer of the reproductive organs is included in this report's chapter on chronic conditions.

Certain reproductive health problems, such as infant and maternal mortality, the use of contraceptives, and venereal diseases are essential indicators of the health status of various groups in the country, as well as of various aspects of health education and medical care utilization and provision.

Indicators of the extent of reproductive diseases and related problems in this country are their reported incidence and prevalence rates. Contraceptive behavior is most commonly reported on the basis of the number of visits to family planning clinics and personal behavior reports gathered by surveys.

This chapter will focus on maternity-related conditions, contraception, and venereal disease. The aim is to present the reported data for the disadvantaged as compared with those of the rest of the population, in order to shed light on their relative health status at one point in time and over a period of time. Much of the available statistical information differentiates between whites and non-whites. It should be stressed, however, that since the non-white minorities constitute a substantial part of the low income and less well educated population in this country, the racial/ethnic disparities, with respect to reproductive health problems, are partly functions of socioeconomic differences.

Closely related reproductive health problems are mental retardation and genetic diseases. This chapter will, also, present some general information about the status of the disadvantaged, with respect to these health problems.

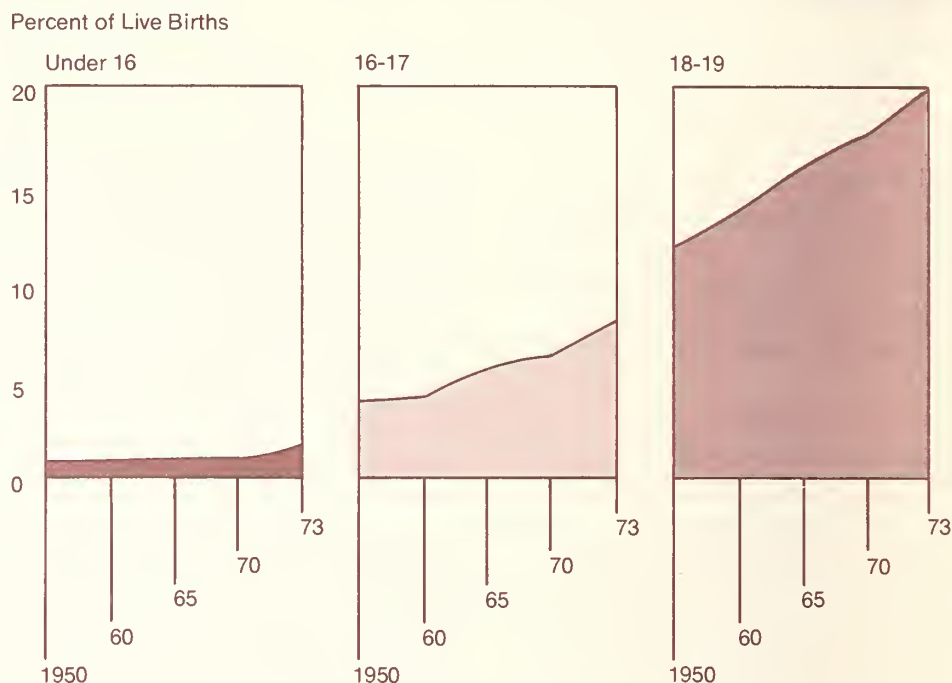
C. Maternity-related Conditions

1. *Teenage Pregnancy.* Many interdependent variables make teenage preg-

Natality

Percent of Live Births To Women Under Age 20, U.S.A. 1950-1973

Figure 1.



Source: Gabriel Stickle, Paul Ma, *Pregnancy in Adolescents: Scope of the Problem*. Contemporary OB/Gyn, June 1975.

nancy a health problem. The risks involve both mother and child, and, therefore, have implications for the future as well as the present. Because of their physiological and psychological immaturity, with respect to childbearing and childrearing, teenage women constitute one group of "mothers-at-risk". This will become evident as we present data on other maternity-related health problems, and it is of special relevance when analyzing the reproductive health status among the disadvantaged.

In 1975, the birth rate per 1000 women below the age of 16 was 11. For women between 16 and 17 it was 46.9; and among women in the age group 18-19 it was 86.1 (1). These rates compare to 112.9 per 1000 women aged 20-29 who had the highest age-specific birth rate that year. Since the 1950's, there has been an overall decline in birth rates. This decline was more pronounced among older women; however, with the result that, of all births, relatively more oc-

curred among teenage women. Figure 1 shows the increase between 1950-1973 in proportion of live births to women under 20.

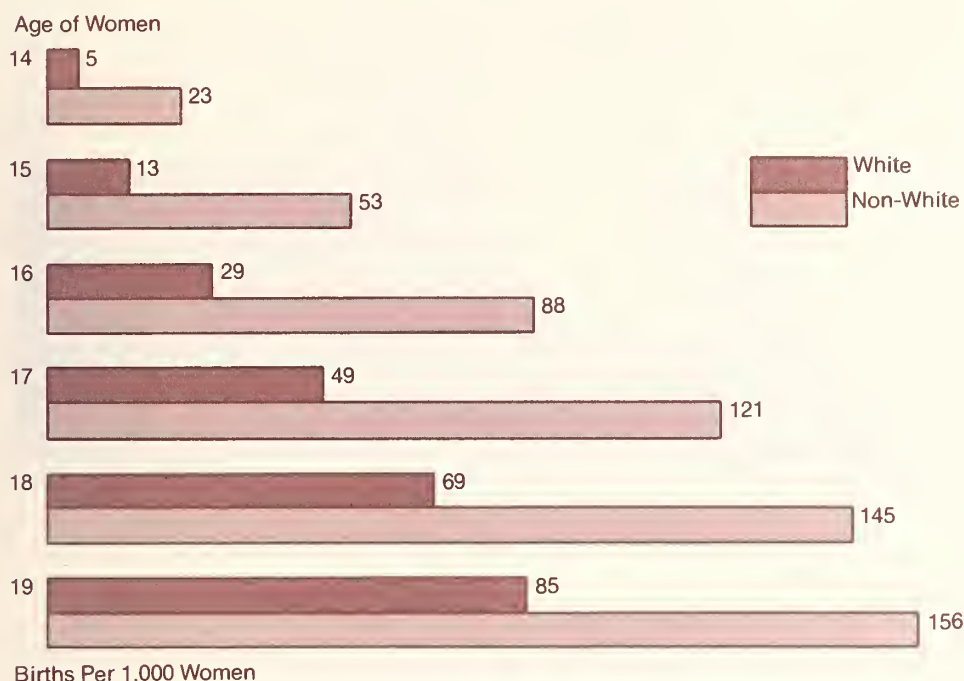
In the beginning of the 70's, the U.S. birth rate for women under 20 was higher than in England, Sweden, Japan, and France (2).

Nonwhites show higher teenage fertility than whites, particularly in the lower teens. As Figure 2 illustrates, the rate among nonwhite girls aged 14 is about five times as high as that among whites (nearly 25 per 1000 women compared with 5 per 1000 women), whereas it declines to being only approximately twice as high for 19-year-old girls (150 per 1000 women vs. 85 per 1000 women). Recent data show, however, that the fertility rate for 14 and 15 year olds is increasing, while the opposite is true among nonwhite girls of the same ages. Since the 1920's, the overall racial differences have remained the same, and patterns of change have, also, been quite similar between the white and

Natality

Birth Rates of U. S. Teenage Women by Age and Race: 1974

Figure 2.



Source: Adolescent Pregnancy and Childbearing—Growing Concerns for Americans. Population Bulletin. Vol. 31, No. 2, September 1976.

nonwhite groups, except for the recent change among the birth rates of 14 and 15 year olds. It will be interesting to continue to watch the differential pattern for the young teens, as evidenced recently, to see if it will continue in the future. If the birth rate among 14 and 15 year old whites continues to increase, while the rates of nonwhites of the same age remain stable, the racial differential in these birth rates may disappear, or reverse themselves in time. The racial difference in birth rates among teenagers may have been due to differential utilization of and availability of family planning clinics and contraceptive devices.

Racial differences in sexual behavior, as well as in attitudes and values, are variables to consider as explanations for the differential rates in teenage pregnancy. A study at the Johns Hopkins University (3) showed that it was far more common among black unmarried teenagers than among white unmarried teenagers to report ever having had sexual intercourse. Those

aged 15 differed most in their sexual experience: 32 percent of the black girls vs. 11 percent of the white girls reported having ever had intercourse. It is conceivable that any racial difference in attitudes toward sexual activity may result in a differential willingness to discuss sexual matters. What part of the reported racial differences represents a real racial difference in sexual activity, and what part of the difference may be attributed to differences in accurate reporting is difficult to ascertain. In interpreting this difference, it should, also, be noted that black girls tend to become sexually mature at an earlier age than white girls (2).

Blacks have traditionally been less accepting of induced abortions, and both illegal and legal abortions have been less common among blacks than whites. There is evidence that changes are occurring in attitudes to an incidence of abortion among blacks (see the section in this chapter on abortion).

The system of extended families, which is more prevalent among blacks, could, also, facilitate the care-taking of an infant, and thus indirectly contribute to the higher rates of teenage births in the black than in the white segment of the population.

2. Babies born out of wedlock although not a health problem in itself, can lead to health problems, in that unwed mothers of out of wedlock babies are less likely to seek prenatal care or adequately care for their infant. In addition, out of wedlock births are becoming increasingly concentrated among teenage women, a group which is physiologically and psychologically inadequately prepared for motherhood. Out of wedlock births lead to a greater risk of low birth weight, fetal death, and infant mortality.

While most other measures of maternal and child health reviewed here have shown improvement during the past decades, out of wedlock birth rates have been increasing, and they have spread concern about the implications of those increases.

There have been large differences between whites and nonwhites, with respect to the incidence of out of wedlock births, as well as changes in out of wedlock births over time. In 1940 the rate was almost 10 times higher among nonwhites than among whites: 35.6 per 1000 unmarried black women 15-44 years of age, as compared to 3.6 per 1000 unmarried white women 15-44 years of age (4). In the following decade, there was a more rapid increase in the rate for nonwhite women, reaching 71.2 per 1000 unmarried women 15-44 in 1950. The corresponding figure for whites was 6.1. During the following 15 years, the rate of increase shifted so that the sharper rise was among white women, although the rates for nonwhite women were still rising. By 1965, the rate for the latter group had reached 11.6, as compared to 97.6 for non-white women, constituting a ratio of 8.4.

Between 1960 and 1974, the numbers of babies born out of wedlock rate rose

by a drastic 52 percent in the age group 15-19 whereas it declined in all other age groups (2). The increase had especially been large among white teenagers (see Table 1), but did not approximate the nonwhite rate of 88.8. In 1974 teenage mothers gave birth to 53 percent of the total number of infants born out of wedlock in the U.S.

The rate for *all age-groups* in the white population rose to 11.9 in 1973, but fell to 84.2 among nonwhites (5). Although the nonwhite rate has begun to decline, the racial differential must still be considered extremely large. Racial differences in terms of attitudes toward induced abortion, and in terms of accessibility and availability of services, may explain some of the differences in out of wedlock births described above. Since 1972, however, legal abortions have been easier to obtain, and recent data show that blacks are beginning to accept the practice of abortions (see the section on abortion in this chapter). Other contributory factors to the racial differential in out of wedlock births may be sought in socio-economic and cultural differences, in relation to contraceptive behavior, family composition, and the establishment of families. Concerning the establishment of a family, Pratt (6) found that white couples were more likely to marry soon after pregnancy was discovered than were non-white couples. Nonwhite couples were more apt to wait until after one or more children were born. This finding merits further study of racial differences in premarital conception, as contrasted with such differences in out of wedlock birth rates. More recent studies of teenage marriages indicate an overall decline in the proportion of out of wedlock conceptions leading to marriage. Since out of wedlock births have increased more notably among white teenagers, it is difficult to know how much of this increase reflects a reduction in marriage rates, or a rise in premarital conceptions.

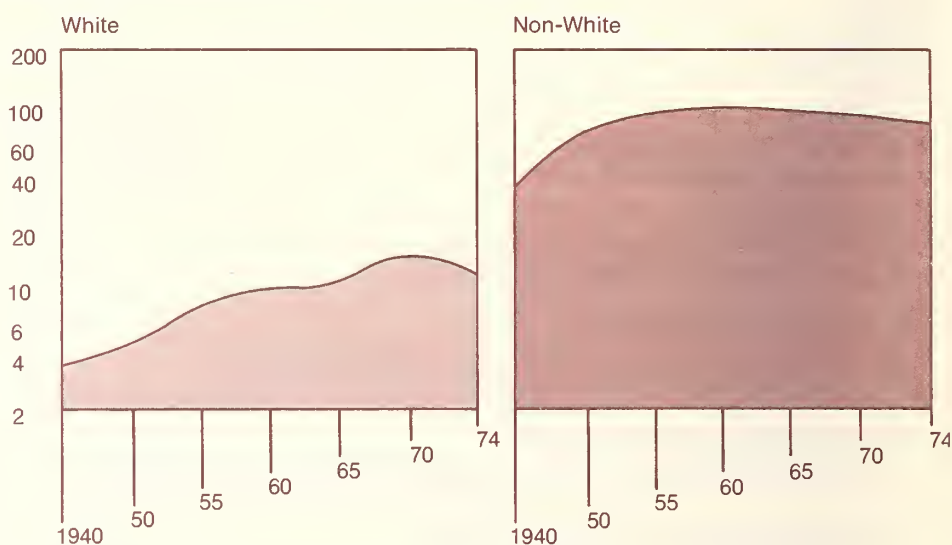
The use of out of wedlock *ratios* for analytical purposes have certain disadvantages in that the numerator and

Illegitimacy Rates

Estimated Illegitimacy Rates by Race: United States, 1940, 1950, 1955-65 (Semilogarithmic Scale)

Figure 3.

Rate Per 1,000 Unmarried Women Aged 15-44 Years



Sources: (1) Trends in Illegitimacy, United States—1940-1965, Vital and Health Statistics, Series 21—Number 15, U. S. Department of Health, Education, and Welfare, National Center for Health Statistics, Rockville, Md., December 1968. (2) Vital Statistics of the United States, 1974, Vol. 1—Nativity. U. S. Department of Health, Education, and Welfare, Hyattsville, Md., 1978.

the denominator are affected by two independent factors. Out of wedlock births (the numerator) are influenced by the number of unmarried women in the population and by the rate of these births. The total number of live births (the denominator) is mostly affected by the proportion of women who are married and by factors which have an impact on marital fertility. In this context, the difference between a ratio and a rate should be explained. In an out of wedlock *rate*, denominator refers to the population *at risk* (unmarried women), whereas, the denominator in this *ratio* is the total number of people giving birth.

Out of wedlock birth ratios for 1975, rather than rates, were available for the local area of Allegheny County, Pennsylvania. Ratios for the nation, as a whole, will be used in order to make comparisons possible. In 1975, there were 35 out of wedlock births per 1000 live white births, and 493 per 1000 live nonwhite births in Allegheny County (7). The corresponding national figures were 63 and 417. The

fact that out of wedlock births tend to be higher in metropolitan than non-metropolitan areas (see Table 2) is reflected in the figures from the city of Pittsburgh, within Allegheny County: the white ratio was 62 and the non-white 534. As was mentioned earlier, differences in the number of unmarried women of childbearing age influence the disparity between national and local out of wedlock birth ratios.

3. Maternal Mortality. In the beginning of this century, death due to maternity-related problems was still a relatively common phenomenon. Maternal mortality rates started to decline markedly in the 30's, and have continued to do so. The total maternal death rate per 100,000 live births in 1930 was almost 700 as compared to 12.8 in 1975 (8) (9).

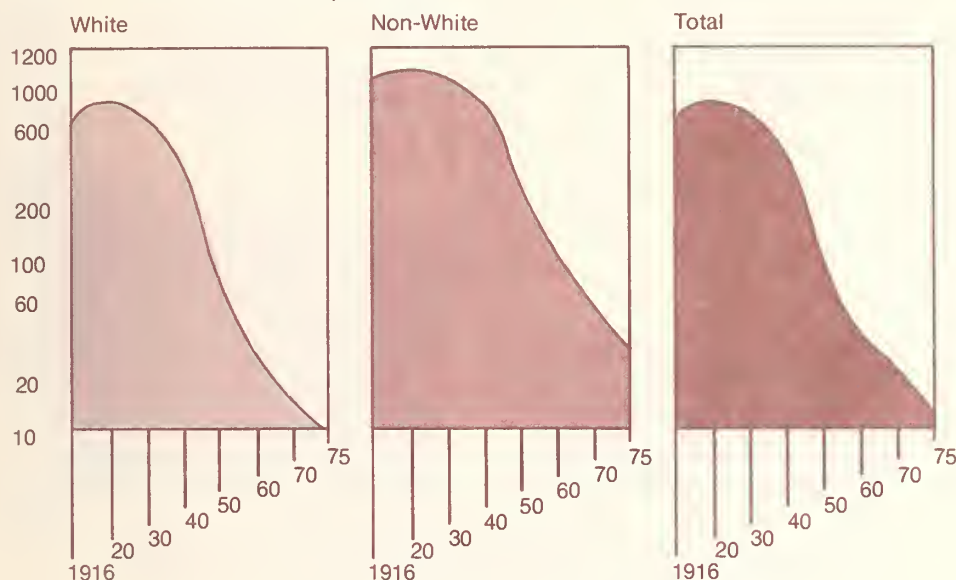
Drastic declines have been evidenced in all racial groups, and with respect to indicators of maternal health status among the racial minorities, maternal mortality shows the greatest improvement. Despite the dramatic reduction,

Maternal Mortality

Maternal Mortality Rates Per 100,000 Live Births, by Race:
United States, 1916-72

Figure 4.

Rate Per 100,000 Live Births (Log. Scale)



Source: Joseph Garfinkel, Marion Johnson Chabot and Margaret W. Pratt, *Infant, Maternal and Childhood Mortality in the United States 1968-1973*. U. S. Department of Health, Education, and Welfare, DHEW Publication No. (HSA) 75-5013, 1975.

there is still a substantial difference between white and nonwhite maternal death rates. In 1950, the rate was 60 per 100,000 live births for whites, as compared to 221.6 per 100,000 live births for nonwhites (8). The ratio of nonwhite to white maternal deaths was 3.7. During the following 20 years, the two populations showed an overall decline at a similar pace, with the nonwhite to white ratio rising slightly to 3.9, resulting in rates of 14.4 and 55.9, respectively (10). Thus, in 1970, the nonwhite population lagged 20 years, a full generation, behind the white in maternal death rates. In the years since 1970, however, the racial differential has been reduced slightly. By 1975, the mortality rate among nonwhites was 29.0 and among whites 9.1 (9). Despite a narrowing of the gap, the nonwhite maternal death rate is still 3.2 times that of the white.

An epidemiological study of maternal deaths in Michigan, between 1950 and 1971, also, revealed that racial disparities in maternal mortality rates did not decrease during this period,

although the overall rates declined (11). The racial differential remained higher, above 4, than the difference between the two subpopulations nationwide.

The increased risk for young girls giving birth is reflected in their maternal mortality rate. In 1973, the maternal mortality rate for women under 15 was 46.7 per 100,000 live births, which was higher than the rates for all other age-groups below 40 (1).

Several factors contributed to the sharp reduction in maternal mortality during the past 50 years. Medical advances, expansion and increased availability and utilization of prenatal and maternal health programs, and liberalization of abortion laws, have been important influences on the decline of maternal mortality. Considering the comparatively high maternal death rate that still exists among nonwhites, further improvement in some of these areas are still needed.

The most common cause for maternal

deaths among white women in 1975 was sepsis, 2 per 100,000 live births, followed by toxemia, 1.8 per 100,000 live births, (9). Among black women toxemia (5.4) and ectopic pregnancy (5.2) were the leading causes. Black women experienced the most dramatic decline since 1970 in maternal deaths due to toxemia: from 11.6 to 5.6 per 100,000 live births and abortions, induced and spontaneous, and from 11.1 to 5.3 per 100,000 live births. Of women who died from illegal abortions between 1972-1974, 69.8 were nonwhite. Of those whose deaths were associated with legal abortions, the nonwhite proportion was 51.4 percent (12).

4. Low Birth Weight. A "low birth weight infant" refers to an infant weighing 2,500 grams or less at birth. Such a baby has a much higher risk of dying in the first 4 weeks of life than a baby weighing more than 2,400 grams or 5.6 pounds (see section on infant mortality).

Between 1950 and 1968, the overall low birth weight ratio for the U.S. changed from 7.5 to 8.2 per 100 live births (13). This change reflects the increase from 10.2 to 13.7 for other-than-white infants, since the 7.1 ratio in the white population remained practically unchanged in that time period. Two racial differences, in terms of low birth weight infants born between 1950 and 1968, are apparent in Figure 5, and they are important to note: the ratios for whites were substantially lower than those for nonwhite infants, and the differential between the ratios increased during that period from 1.44 to 1.93.

The increase among nonwhites may, to some extent, be a statistical artifact, in that recording of birth weight could have been misstated in deliveries by midwives functioning outside of hospitals. Midwife deliveries of social/ethnic minority mothers were more common before the 1960's. Another factor to be considered is improved prenatal care, preventing both spontaneous abortions and stillbirths, thus increasing the likelihood of a live birth of a low weight baby.

By 1975, an overall decline in low birth weight ratios was evident. In the U.S. as a whole, the ratio had dropped to 7.4. Among white it had declined to 6.2, and among nonwhites to 13.1 (7). The relatively small decline in the nonwhite population increased the racial differential to above 2. Improved provision and utilization of prenatal care, as well as an overall higher standard of living, could be factors associated with the reduction in overall underweight births. The substantial racial/ethnic disparity which still exists, suggests, however, that these improvements have not sufficiently affected the nonwhite population. Local figures for 1975 from Allegheny County, Pennsylvania, including the City of Pittsburgh, were 8.1 total: 6.8 for whites and 14.1 for nonwhites. The factors influencing the numerator and denominator in these ratios should be kept in mind when comparing the figures.

Teenage girls are at a higher risk of having low birth weight babies than women in any other age group. With the exception of women aged 40-44, the racial differential in incidence of low birth weight is highest for girls under 15. Within this age group in 1968, 21 percent of the nonwhite newborns compared with 13 percent of whites weighed less than 2,500 grams (1).

Despite reductions in low birth weight incidence, the U.S. in 1975 had a 16 percent higher incidence than Great Britain, 25 percent higher incidence than Japan, and 60 percent higher incidence than Finland and Iceland (14).

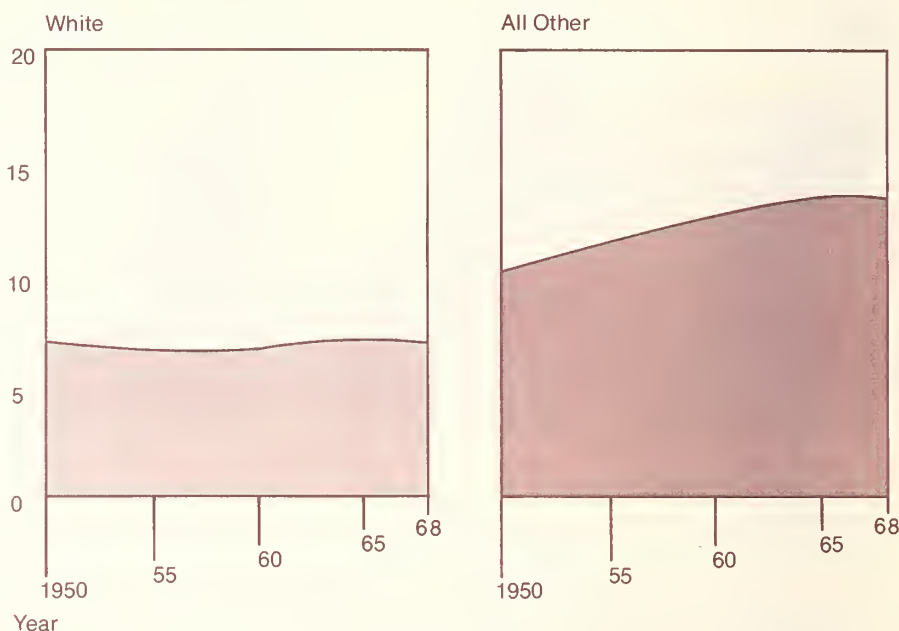
Several physiological and sociological variables are correlated with the incidence of low birth weight. Gestation, birth order, prenatal care, maternal age, marriage status, and socioeconomic level are among the correlates. Several studies show that a positive relationship exists between socioeconomic level and birth weight (13). It is believed that about one-third of the low weight births are caused by inadequate maternal nutrition (14). Table 2 describes how the

Birth Weight

Low Birth Weight Ratios Among Live-Born Infants by Race: United States, 1950-68. (Excludes Birth Weight Not Stated)

Figure 5.

Percent of Low Birth Weight



Source: Helen C. Chase, Trends in Low Birth Weight Ratios, United States and Each State, 1950-68, U. S. Department of Health, Education and Welfare, Public Health Service, Health Services and Mental Health Administration, Rockville, Md. June 1973.

ratio of low birth weight infants increases when they are born out of wedlock to teenagers and women over 30 years of age. Since the rates for out of wedlock births and teenage fertility are higher among the racial/ethnic minorities, these groups are predisposed to low birth weight as a health problem. Figure 6 illustrates how the proportion of low weight newborns rises for mothers who start their prenatal care later in the pregnancy, or do not receive any at all.

5. Prenatal Care The maternal health-related problems discussed in this chapter point to the vital role of prenatal care. Adequate prenatal care includes a first visit during the first trimester and nine or more subsequent visits.

Teenagers and unmarried pregnant women are less apt to seek prenatal care. In 1974, less than 40 percent of pregnant adolescents in New York received prenatal care in the first trimester, as compared to 68 percent of

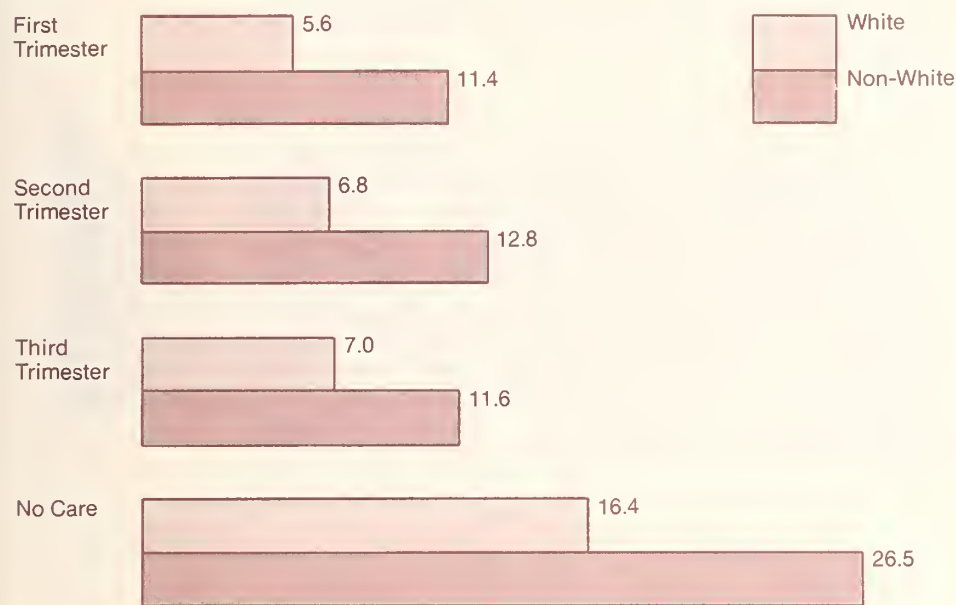
women between 20-30 years of age (14). Figures from 33 states and the District of Columbia showed that in 1973, 46.5 percent of married mothers began prenatal care in their first trimester, contrasted with only 19.3 percent of unmarried mothers (5). The relationship between prenatal care and birth weight was discussed in the previous section. The influence of inadequate, or lack of, prenatal care on infant mortality will be treated in the next section.

The data from 33 reporting states and the District of Columbia show that in 1973, 3.6 percent of blacks who gave birth and 1.1 percent of whites who gave birth had had no prenatal care. Racial differences are also evident, with respect to what trimester prenatal care was first received (see Figure 7). The great majority of the white women, 74.6 percent, started receiving care in the first trimester, whereas only 50.4 percent of the black women did so. More than twice the proportion of

Neonates

Percent of Neonates Weighing 5½ Pounds or Less, by Trimester in Which Mothers Began Prenatal Care, 42 States and the District of Columbia, 1974.

Figure 6.



Source: Gabriel Stickler, Paul Ma, Some Social and Medical Correlates of Pregnancy Outcome, *American Journal of Obstetrics and Gynecology*, Vol. 127, No. 2, January 15, 1977.

blacks, 9 percent, as compared with whites, 4.2 percent, did not obtain prenatal care until the third trimester.

Figures from Allegheny County show an encouraging trend: the proportion of nonwhite women without or with unknown prenatal care dropped from 18.0 percent in 1974 to 3.8 percent in 1976 (7). The white ratio declined from 5.9 percent to 1.2 percent during the same time period. These figures are rather crude measures of medical care, and they do not indicate anything about adequacy, since no information is given on the number of prenatal visits and/or when the visits began.

In a study examining the social and medical risks of mothers, who delivered during the year 1968 in New York, Chase found that approximately 70 percent of the medical risks could have been identified at a first prenatal visit (15). All of the risks which Chase defined as social (see next section for definitions) could, also, have been identified at such a visit. The findings

of the study showed that mothers who are at the highest social and medical risk had the least medical care during pregnancy: 12 percent of the Puerto Rican, and 11 percent of the Black women, received medical attention during the first trimester, and 30 percent and 25 percent, respectively, had as many as nine prenatal visits. The corresponding figures for White women were 52 percent and 57 percent. A more recent study in upstate New York revealed the same situation. The women who were at the greatest risk were least likely to have had adequate medical attention during pregnancy: less than half of the women who were at risk for several of the social and medical risk types had received prenatal care during the first three months, as opposed to 4 out of 5 of the women who were at no risk (14).

6. *Abortion* Prior to the liberalization of abortion laws, black women of low socio-economic status were more likely to have abortions by non-

licensed practitioners or self-induced abortions, whereas white women, especially those in higher income brackets, could take advantage of liberal practices by private physicians. As a result, no reliable data exist on abortion practices prior to 1970.

This situation has changed markedly, as legal abortions have become more easily obtainable during the 1970's. Since 1970, the abortion clinics have witnessed a steady increase in the proportion of nonwhite women patients. In 1971, 21 percent of all women who received abortions were nonwhite as compared to 32 percent in 1975 (16). The fact that abortions are becoming more common among nonwhite women is more strikingly evident in the race-specific ratios: between 1972 and 1975 the nonwhite ratio rose from 225 to 476 abortions per 1000 live births, compared to a change from 161 to 277 per 1000 live births among whites. This represented an increase of 111 percent for nonwhite women and 72 percent for white women. If the rate of change in the proportion of nonwhite and white women having abortions continues, nonwhites will be having half of all the abortions by the beginning of the next decade, even though they represent less than 20 percent of the total population.

In 1971, figures from Allegheny County corresponded well to the national: 21 percent of the women who had abortions that year were black (17). By 1972, the proportion had increased to 23 percent. In that year, the black abortion ratio rose from 349 to 406 per 1000 live births. The corresponding figures for white women were 235 and 251 abortions per 1000 live births. These local data for 1971 and 1972 indicated the beginning of changes similar to the national changes between 1971 and 1975. Information on abortion in Allegheny County was not available for the years since 1972, thus we cannot know whether the trend continued in the same direction as that demonstrated nationally.

Although blacks have consistently shown less approval of abortions than

whites, their attitudes have become more liberal in recent years. A study by Ryser, Cutler, and Grice (18) revealed that in 1971 only 3 percent of a sample of blacks agreed that abortion should be considered, if there were health and other problems involved for the mother and child; whereas 11 percent of the white approved. In 1973, the proportion agreeing had risen to 20 percent for the blacks and 41 percent among the whites. Another study showed, that while 32 percent of a nonwhite sample disapproved of abortions for any reason in 1972, only 16 percent held the same view in 1975 (19). Concomitantly, whites may have become more accepting of having a child out of wedlock. Attitudinal changes thus appear to be an important contributing factor to the changing racial composition of women having abortions.

There appears to be a tendency among blacks to seek abortions later in pregnancy than whites, regardless of income. One can speculate that fear, stemming from the risks of the illegal abortions which used to be more common in this group, still may be an influence for some to postpone a decision to terminate a pregnancy. Ryser, Laufe, and Berg (20) found, however, that once a decision was made, the reasons given for that decision were quite similar for both racial groups.

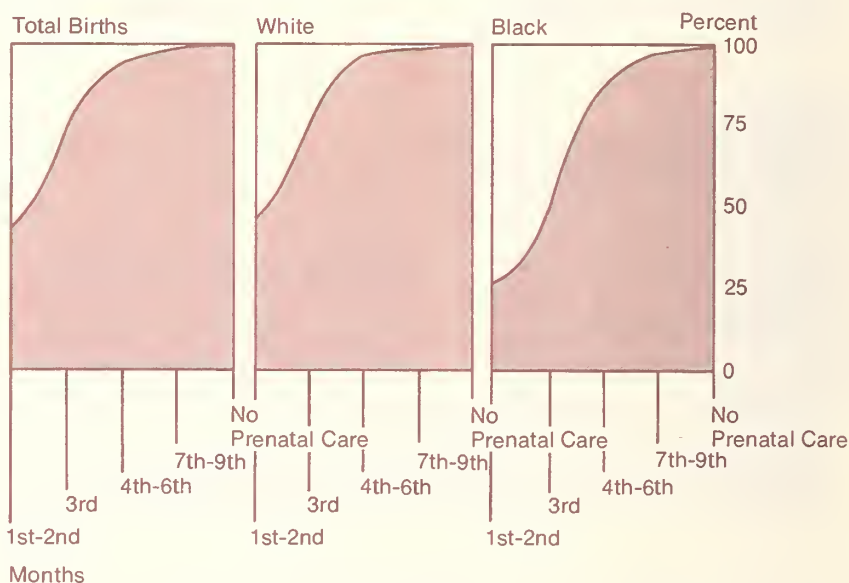
7. Infant Mortality. There are many ways to assess the health status of a people. Mortality, longevity, prevalence of disease and disability are a few of the measures used. One of the most universally accepted measures is infant mortality. The survival and quality of life of the infant during its first year of life reflects the health of the mother, as well as the general social, economic, and health conditions of the environment. In 1976, 17 of every 1000 live born infants in this country died during their first year of life (14). Infant death rates vary considerably between the states, from a low of 13.9 per 1000 live births in New Hampshire to a high of 25.5 per 1000 live births in Mississippi in 1973 (10). There have been sharp reductions in

Live Births

Percent Distribution of Live Births by Month of Pregnancy Prenatal Care Began, by Race
Total of 33 Reporting States and the District of Columbia, 1973

(Based on 100% of births in selected States and on a 50% sample of births in all other States. Refers only to birth occurring within the areas reporting month of pregnancy prenatal care began of residents of these areas.)

Figure 7.



Source: Health United States 1975, U. S. Department of Health, Education and Welfare, Publication No. (HRA) 76-1232

infant mortality rates over the past 25 years: the 1976 rate represents a decline of about 40 percent since 1950 (5). Despite this sizable decline, 17 infants dying out of every 1000 live born is a large number when compared to other western countries. In 1974, the U.S. had a higher infant death rate than 16 other industrialized countries (21). In 1950, the U.S. ranked sixth. Some of these other countries have fewer resources than the U.S. International variations in the definition and reporting of birth statistics are not sufficient to explain why the U.S. lags behind so many other countries.

Not only is the international position of the U.S., with respect to infant mortality rate, notable, but so are the wide differences in rates between the racial/ethnic sub-populations within the country. In 1975, there were 24.2 infant deaths per 1000 live nonwhite births, compared to 14.1 among white infants (22). This constitutes a ratio of

1.7. Although the white rate was low relative to that for nonwhites, it was still higher than that of several of the other countries. As Figure 8 illustrates, the gap between white and non-white infant mortality rates started to decline more rapidly than the white. This decline brought the minority ratio back to approximately what it was in 1950.

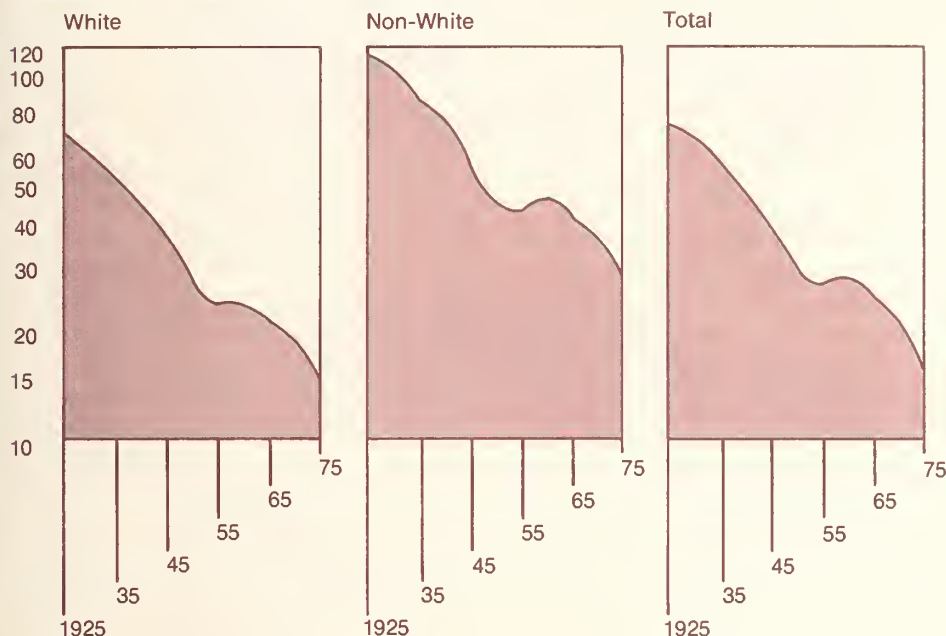
The nonwhite segment of the population still lags one generation behind the whites, with respect to mortality during infancy. If the rates of decline during the first half of this decade continue until 1980 for both sub-populations, the minority ratio will have dropped to 1.6. The nonwhite rate will, then, correspond to what the white rate was at the end of the 60's. Thus, although the racial disparity in infant mortality is decreasing, the difference in rates is still substantial, and changes in that disparity are occurring quite slowly. The infant mor-

Infant Mortality

Infant Mortality Rates by Race, 1925-75

Figure 8.

Deaths Under 1 Year of Age Per 1000 Live Births



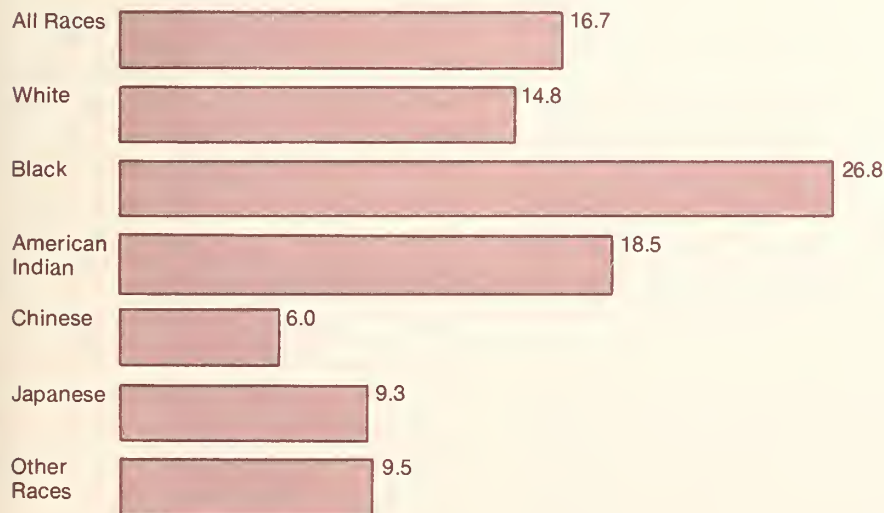
Source: Health in the United States, 1975, A Chartbook, U. S. Department of Health, Education, and Welfare, DHEW Publication No. (HRA) 76-1233.

Infant Mortality

Infant Mortality Rates by Specified Race:
United States, 1974

Figure 9.

Rates Per 1,000 Live Births



Source: National Center for Health Statistics, unpublished Vital Statistics Data.

tality rates for the various minority groups in 1974 are shown in the table below. (See Figure 9)

The most common cause for death among nonwhite infants in 1975 was immaturity, 262.6 per 100,000 live births, followed by congenital anomalies, 252.6 per 100,000 live births. For whites the order was reversed: 277.7 per 100,000 live births died of congenital anomalies, and 111.4 per 100,000 births died of immaturity (22). Differences between the 1975 and 1970 cause specific rates are partly due to changes in the classification system. (see chapter on Vital Statistics.)

Factors related to infant mortality.

The natural questions to ask are why a country such as the U.S. ranks so low in infant mortality compared with other industrialized countries, and why this nation has not improved its relative position over the years. The problem is very complex, and a great number of interrelated factors that impinge on infant mortality that are peculiar to the U.S. have to be considered. A detailed analysis and discussion of these factors is beyond the scope of this chapter. Only some of those factors involved, and the complexity of their interrelationships will be reviewed here.

It has been suggested that one of the basic factors which differentiates the U.S. and 16 other nations in their infant mortality rates is the accessibility of their respective health care systems. This factor, however, is in itself highly related to a series of other social, economic, and cultural factors which differentiate the U.S. from other industrialized nations; and by itself, it cannot explain much of the international disparity. The very fact that the U.S. white population has a higher infant mortality rate than many of those countries points to the important influence of other environmental factors, specific to this nation. One such factor has been the restrictive abortion laws of past decades. Because a legal abortion was difficult, or impossible to obtain, more high-risk pregnancies were completed, adding

to the number of infants dying. Most illegal abortions were performed on well-educated women, whose pregnancies were less likely to be high-risk. The impact of legalized abortion, as one factor on reducing infant mortality rates, would seem to merit further study. Other factors that have been specific to the U.S., compared with other western nations, are high birth rates among women in the lower age groups, and difficulties in obtaining family planning services. The U.S., also, has a comparatively large proportion of disadvantaged people in the population. As has been documented in this chapter, most of the maternity-related health problems, which are correlated with infant mortality, are more common in the disadvantaged segment of the population. All of these factors, thus, contribute to the relatively poor showing of the U.S. in international comparisons of infant mortality rates.

This brings us back to the domestic differences between white and non-white infant death rates. Out of wedlock and teenage births are two of the variables correlated with infant mortality, and, also, they constitute two of the more prevalent maternity-related problems among minorities. Table 2 illustrates that substantial racial disparities still exist when these two variables are controlled, although the difference in infant mortality by lawful status is greater for whites than for blacks.

While some researchers have pointed to the all-important role of adequate prenatal care in preventing infant deaths, others have been pessimistic about its effectiveness in the face of adverse environmental influences. In the study, mentioned earlier, of all of the 1968 birth records in New York, Chase found that, although the infant mortality rates for white and black native-born women, who had had nine or more prenatal visits, were half of those for women who had had four or less; the racial differential did not change (15). This finding illustrates the differential influence of other negative variables on the two sub-populations.

Higher parity among blacks is another factor contributing to the racial difference in infant death rates.

In her extensive study, Chase identified certain risk factors and their impact on infant mortality among ethnic groups in New York. Both socio-demographic risk factors, including unfavorable combinations of age of mother/birth order, maternal education of eight years or less, out of wedlock births, and medical-obstetrical risks, previous pregnancy problems, serology, and complications of delivery, were concentrated among the racial-ethnic minorities. The difference between minorities and white native-born, with respect to medical-obstetrical risks, was smaller than it was for socio-demographic risks. Although Chase's study was limited to New York City and generalizations of the findings to the nation as whole are not possible to make, there are many other urban areas with similar problems. In addition, the extensiveness of the study can prove helpful in showing variable relationships which need further investigation.

Table 3 shows that within the different risk categories, the Black native-born group had a higher infant death rate than the White native-born group, with no risk and the socio-demographic risks contributing to the widest disparity. The Puerto Ricans were closer to the White native-born group than to the Blacks in infant mortality by sociodemographic and/or medical-obstetric risks. The relatively large racial differential which existed, despite controlling for risk category, indicated the influence of additional factors keeping the Black infant mortality rate higher than the White, and further points to the complexity of the problem.

Chase found that the variable most strongly correlated with infant mortality was birth weight. Since low birth weight was not included among the identified risks, and since its incidence was higher among the ethnic/racial minorities, this variable was adjusted when comparing infant mortality rates

between the groups by risk categories. When risk category was controlled, the white native-born still had lower overall mortality rates than the ethnic/racial minorities, with the differences between groups being smallest for those with medical-obstetrical risks only, or in combination with socio-demographically related risks. This, again, indicates that other variables are in operation which affect the minority infant mortality rates. Chase introduced the type of medical service as another variable. The use of private services appeared as a variable not to affect the racial/ethnic differences. The disparity between whites and blacks nearly disappeared, however, for those who used general services and who had neither medical-obstetrical nor socio-demographic risks. These findings point to income level as an intervening variable, and further exploration of the relationship between this variable and infant mortality may be needed, in order to be able to explain the above-mentioned results. An up-dated version of the New York study would also be useful in order to evaluate whether socio-economic changes since 1968 have had an impact on racial/ethnic differences found in infant mortality rates.

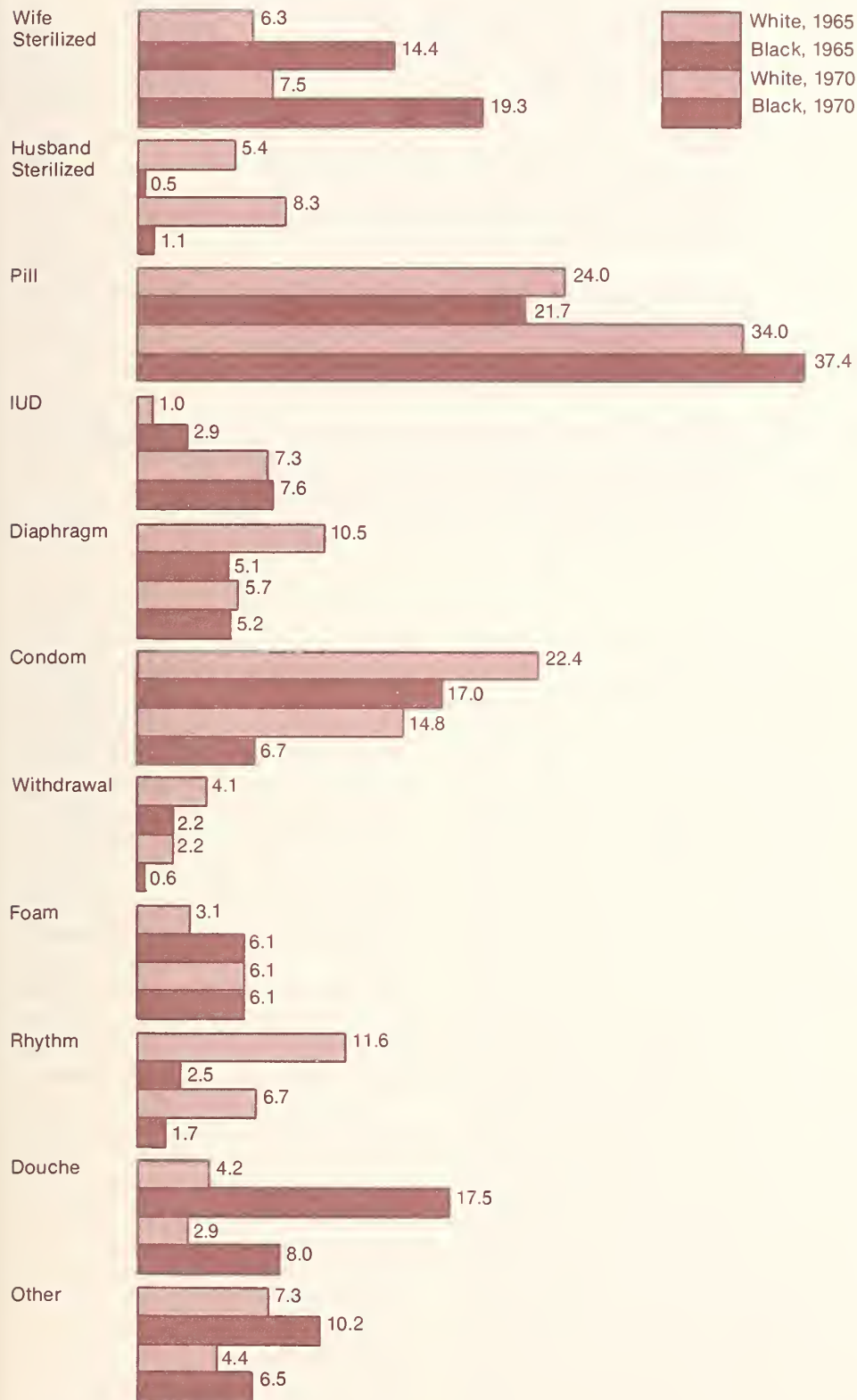
D. Contraception

1. *Contraceptive Behavior.* Since the world's population problem has become an issue of debate during the last decade, family planning has become an accepted practice by large segments of the American society. Some sectors within the black population have, however, expressed fears about birth control coercion and birth control constituting a disguised plot by whites to commit genocide against blacks. Data since the 60's, though, do attest to the fact that birth control has become more widely practiced in the black population. While in 1960, the Growth of American Families Survey showed that 60 percent of nonwhites had used birth control methods at some time in their married life: 77 percent said that they had done so in 1965 (23). A later study showed a similar,

Contraceptives

Percent Changes in Types of Contraceptives Used by Married Couples, by Race, 1965 and 1970.

Figure 10.



Note: Some methods are counted if they are used in combination with others.

Source: Family Size and the Black American, Population Bulletin, Vol. 30, No. 4, 1975.

but smaller, increase in use of contraceptives by blacks between 1965 and 1970. In that study 57 percent of black married women under 45 years of age and 65 percent of white women of the same age used contraceptives in 1965. By 1970, the proportions had changed to 59.2 percent and 65.7 percent (24).

During the 60's, there was also a change toward more effective contraceptive methods being used among blacks. As Figure 10 illustrates, there was a larger increase between 1965 and 1970 in the proportion of black women than white women using oral contraceptives, to the point that it became a more widely used method among blacks than whites. The same is true for the percentage of women being sterilized. Still, approximately 18 percent of the black women used the less efficient method of douche compared to about 8 percent among the whites. In the white group, husbands having vasectomies had become a more common practice by 1970 than in 1965, and it was used considerably more frequently than among blacks: 8.3 percent versus 1 percent. While the proportions using condoms fell in both groups between 1965 and 1970, the decline was greater among blacks, 10 percent, than among whites, approximately 7.5 percent, and in 1970, it was about twice as common for whites, 15 percent, than for blacks, 7 percent, to use this method. These results point to the greater tendency for the black woman, rather than the man, to be in control of fertility, as compared with the sex role differentiation among whites.

Contraception having become more widely practiced, expected fertility declined among both white and black women in all age groups between 1971 and 1974.

Figure 11 illustrates that the older the women were, the larger the racial differences were concerning expected family size, and that the black women's expectations declined, proportionately, more than those of their white counterparts in older age groups. It should be pointed out that

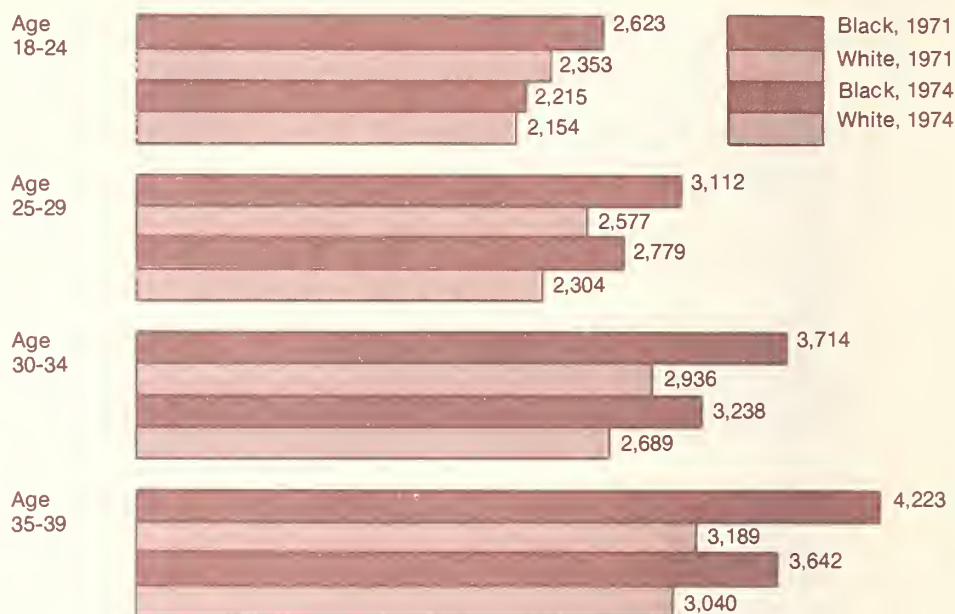
"expected births" include a woman's present children, as well as expected additional ones. Among women under 25 the racial disparity had narrowed considerably between 1971 and 1974, to the point that black and white women expected between 2.2 and 2.3 children on the average. Whether these young women will have as few children as they expect will, of course, depend greatly on their continued use of contraceptives. It can be assumed that the number of children expected, including children already born, by women in the 1970 census, was, generally, larger than they had wanted before they started to have children. This assumption is made on the basis of the results of the 1970 National Fertility Survey, which showed that 13 percent of the white and 27 percent of the black births between 1965 and 1970 had been unwanted, and no less than 42 percent and 61 percent respectively, were unplanned (23). In 1970, approximately 59 percent of black married women and 66 percent of white married women under forty-five years of age were practicing birth control at the time of the interview. A wider racial disparity was found when parity was included as a variable: among married non-pregnant women, who were not trying to become pregnant and who had no children, 63 percent of the blacks and 88 percent of the whites were using contraceptive methods (25). This was probably a reflection of the greater disposition of blacks to postpone birth control until having had a child. This had, also, been the finding of the 1960 Growth of American Families Survey, although at that time there was a tendency for a woman to postpone use of contraceptives until she had had a number of children (23). In 1970, the differences in birth control between black and white women with one child or more were very small (25).

The impact of the increased use of effective birth control methods during the 60's was demonstrated clearly in the findings of the 1972 National Natality Survey. In that year, 9.9 percent of the black married mothers who gave birth reported that the child had

Expected Births

Total Births Expected Per 1,000 Wives, by Race and Age Group, 1971 and 1974.

Figure 11.



Source: Family Size and the Black American, Population Bulletin, Vol. 30, No. 4, 1975.

been unwanted, compared to 8.1 percent of the white mothers (26). The proportion of other nonwhite mothers was 7.3 percent. This represents a significant decline in proportion of unwanted black children since the end of the 60's. (See Page 70). The decline among white women was smaller and, as a result the racial differential, narrowed considerably, from 10 percentage points to less than two percentage points. It should be stressed, however, that the above proportions do not refer to out of wedlock births. Considering the convergence between black and white women, in terms of the proportion of unwanted births in 1972 and the comparatively small proportions in each group, both races will have equal and good chances of having no more children than they want. As was mentioned earlier, the expected number of children for women under 25 years of age of both races was almost the same, on the average 2.2-2.3, which is considerably lower than what was expected by older women, who already had been exposed to having unwanted children. (See Page 70). The

likelihood for young black and white women to have less unwanted children is demonstrated by their increased use of the most effective birth control methods. The overall trends in contraceptive practice between 1965 and 1970 continued during the following three years, (See Table 4) and the use of the more effective means increased significantly in the lower age groups. This was the case, especially, among black young women, and, it contributed to the high overall proportion of black users of these methods, 81 percent, as compared to 68.3 percent among whites. The proportion of blacks using any method at all rose less, however, between 1970 and 1973 than did the white proportion. It was still more common among whites to use the less effective methods, and more common among blacks to use no contraceptive method at all.

It appears that trends in overall contraceptive behavior for black and white married women under forty-five converged between 1960 and 1973. Charles F. Westoff, Co-Director of the National Fertility Studies, states that

the trends toward "increased contraceptive efficiency" have continued since then. He further states that "it seems highly probable that by the end of the 1970's, almost all married couples at risk of unintended pregnancy in the United States will be using contraception, and almost all contraceptors will be protected by the most effective medical methods" (24).

2. Utilization of Family Planning Services. Data from the Planned Parenthood Federation of America indicate that the proportion of blacks who used family planning services has declined during the 1970's. This is contradictory to the findings that blacks have increased their use of those birth control methods which require a prescription or a medical procedure. The proportion of blacks using the family planning services of the Federation dropped from 35 percent to 32 percent between 1971 and 1975 (27).

During the same time period, the percentage of *new* female Planned Parenthood patients who were black decreased from 22 percent to 17 percent as compared with the increase from 76 percent to 80 percent of new white female patients (28). Figures from the Family Planning Council of Southwestern Pennsylvania show trends in the same direction.

In 1973, 54.2 percent of black married women had made *no* visit for family planning in the previous five years, while that proportion for the white married women was 44.2 percent (27). The racial differential was particularly large among teenage wives: 53 percent of the black versus 27 percent of the whites had made no visit. A sizeable racial difference still existed among married women aged 20-24 (32 percent versus 17 percent), and it seems surprising in view of the fact that the use of oral contraception and the IUD increased rather markedly between 1970 and 1973 among young black married women.

In 1973, there were significant differences between black and white married women where family planning services were received. Only 55 percent of visits by black women were in a

physician's office compared with 82 percent for white women. Among teenage wives the corresponding figures were 31 percent and 73 percent. A total of 76.9 percent of black women and 68.8 percent of white women who received services in organized family planning programs in 1976 were below 150 percent of the poverty level. Controlling for poverty status, the 1973 National Survey of Family Growth showed that significant racial differences, nevertheless, existed in the proportion of women who visited a private physician for family planning.

In 1975, approximately 90 percent of the total number of women served by organized family planning programs were of low or marginal income (>200% of the poverty level) (29). Of the 9.9 million women in this income category who needed services, 54 percent were served.

E. Venereal Disease

In the past decade, venereal disease reached epidemic proportions in the U.S. Gonorrhea is the communicable disease most frequently reported. In 1976, there were over 1 million reported cases of gonorrhea and syphilis, primary and secondary, (30). This represents a 254 percent increase since 1965, and it is the highest figure attained since recording of cases began. The estimated number of unreported cases was 1.7 million for 1976. This estimate points to the problem of venereal disease statistics, in that such a large proportion of the total number of cases are believed to be unreported. This means that the apparent changes in rates over the years, the differences between various parts of the country, and the racial, disparities, may be least be due, partly, to variations in reporting and in case findings. Another problem is presented by the apparent lack of racial breakdown for national rates during recent years. This lack may be intentional, resulting from the sensitivity of the subject matter.

Figures available for 1956, 1967, and to 1970 are presented in Figure 12 below:

The racial differences for both types of diseases are significant and cannot be explained fully by shortcomings in reportings. The rates of increase look alarming for both sub-populations, especially with respect to syphilis among nonwhites and gonorrhea among whites. The latter increased by 200 percent between 1956 and 1970.

Lacking national data for recent years, local data from Allegheny County may be used to determine if signs of previous trends still seem to be apparent. Allegheny County's venereal disease rates for 1975 indicates that the incidence of primary and secondary syphilis was comparatively high for nonwhite males, whereas for nonwhite females it was close to the 1970 national nonwhite rate (see Figure 13). The rates for white males and females were considerably lower than the national data, as they had been in 1970. Between 1975 and 1976, however, Allegheny County witnessed declines of 40 and 50 percent in incidence of syphilis for all race/sex groups, except for white females which increased by 60 percent (31).

A slightly different picture emerges for gonorrhea. The local rates for nonwhites in 1975 were higher than the national rates were in 1970, but the local rates were lower among whites than in the 1970 national data (see Figure 14). In 1976, the incidence had dropped between 2.4 percent to 6.8 percent from the previous year for all sex/race groups.

Whether these decreases in gonorrhea rates reflect true reductions in incidence, or less reporting, and/or case findings, is impossible to say. At any rate, the drop in gonorrhea incidence, locally, was not a reflection of national developments, since the total U.S. rates increased between 1975 and 1976.

School-based health education and contraceptive behavior (see section D) may be two of the factors associated with the disparities in venereal disease incidence between whites and nonwhites.

F. Mental Retardation

The mentally retarded person is one who develops at a below average rate and experiences unusual difficulty in learning, social adjustment and economic productivity (32). Because of the broad and imprecise definition of mental retardation, reliable prevalence rates cannot be provided. It is only estimated that more than 6 million people, 3 percent of the total population, are mentally retarded. More than 100,000 babies born each year are likely to be retarded.

Retardation can range from mild to profound and covers over 200 specific conditions. Although causes have been determined for only about one fourth of all cases, it is known that causative agents include biological, genetic, and environmental factors. The fact that mental retardation, particularly mild retardation, is concentrated in the low-income segment of the population indicates the likelihood of socio-economic conditions contributing to mental retardation. Prematurity, which is more common among the disadvantaged, makes an infant more vulnerable to neurological and physical disorders, which can cause mental retardation. Strong relationships have been found between diet and mental and nervous disorders (33).

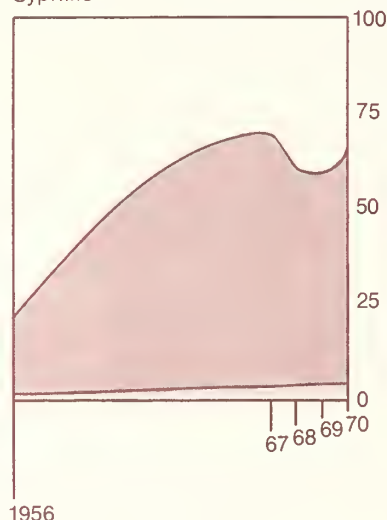
A Presidential report on mental retardation stated that "a child in a low-income, rural or urban family is 15 times more likely to be diagnosed as retarded than is a child from a higher income family" (33). It has been estimated that 50 to 80 percent of mental retardation is closely associated with economic and social inequities and injustices (34). Not only is the prevalence of mental retardation disproportionately high among the disadvantaged, but low income areas suffer from the added problem of less services to prevent and combat this health problem (33). In addition, there is ample evidence that intelligence tests are subject to cultural biases which may place blacks and other minority groups at a disadvantage. Despite the intent of intelligence tests to measure inherent intellectual potential, these

Venereal Disease

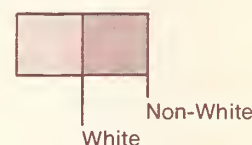
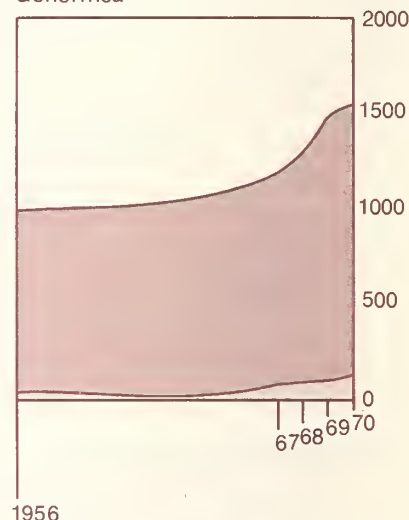
Reported Venereal Disease. Rates Per 100,000
Population by Race United States, 1956 and 1967-1970.
Figure 12.

Rates Per 100,000

Syphilis



Gonorrhea



Source: VD Fact Sheet 1971, D.H.E.W., Public Health Service, Center for Disease Control, Atlanta, Georgia, 1972

tests inescapably measure in part "learned" information of both an intellectual and cultural nature.

G. Genetic Diseases

For the purposes of this report genetic disorders are defined as those disorders which are known to have a genetic basis as opposed to disorders that are considered to have predominantly an ontological environmental or life-style basis. As genetic research continues, more disorders may be added to the list of diseases that are determined by genetic factors.

A search for recent data on the prevalence of genetic disorders yielded information on sickle-cell anemia only. Therefore, only general information on some of the other common inherited diseases is presented here.

It is estimated that sickle-cell anemia affects 50,000 people in the U.S., most of them black (35). Over 12 million

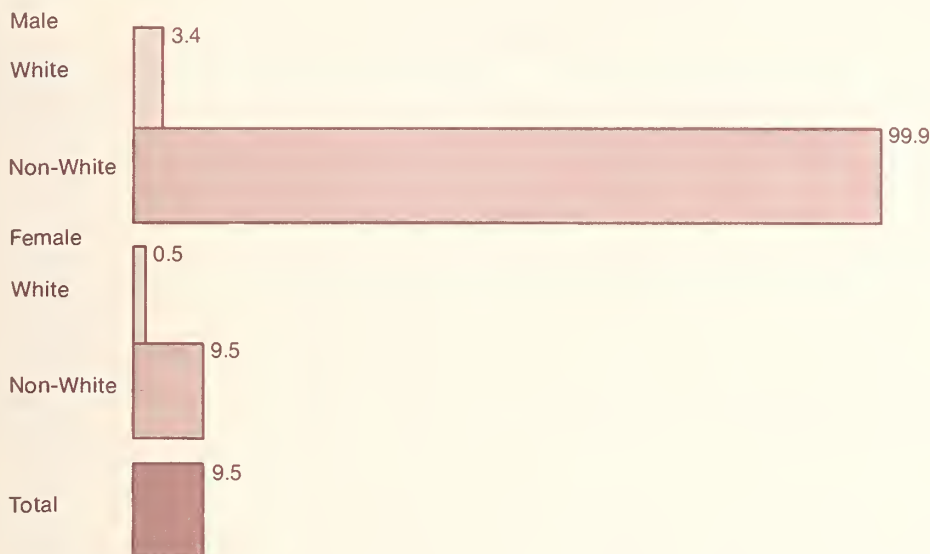
Americans are carriers of the sickle-cell trait. If both parents are carriers, a child has a 25 percent chance of inheriting the disease. Sickle-cell anemia interferes with the health of its victims throughout their lives, often necessitating hospitalization, and considerably shortening their life spans (37). In 1967, 340 blacks and 6 whites died of this disease (37).

Other inherited disorders which are linked to certain ethnic groups include cystic fibrosis which primarily affects whites, Tay-Sachs which occurs almost exclusively among Jews of eastern European descent, and thalassemia, with a relatively high incidence among people of Mediterranean origin (21). Phenylketonuria (PKU) which usually causes mental retardation is more prevalent among people of European origin than among blacks and eastern Jews (26). Carriers of sickle-cell anemia, Tay-Sachs, and thalassemia

Primary and Secondary Syphilis

Incidence of Primary and Secondary Syphilis per 100,000 Population
by Sex and Race
Allegheny County, Pennsylvania 1975

Figure 13.



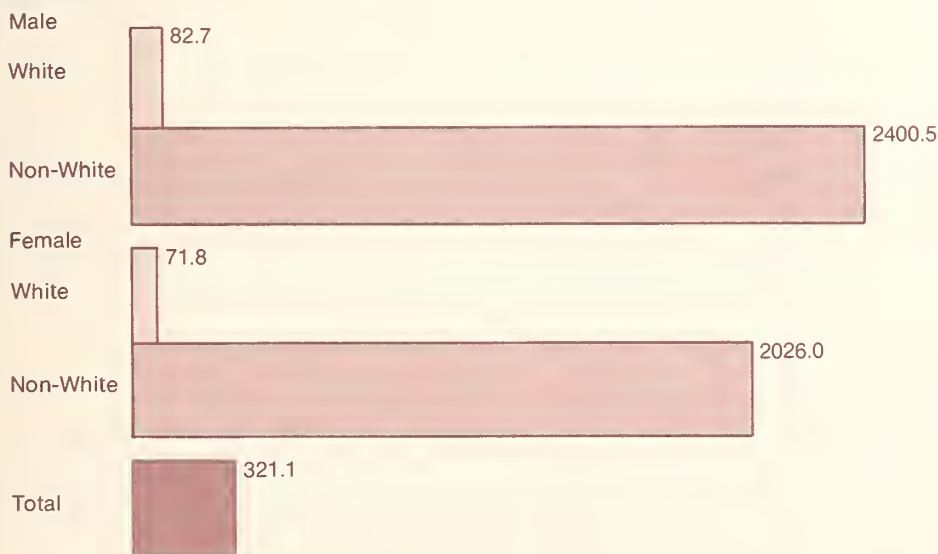
Source: Veneral Disease in Allegheny County, Pennsylvania by Age and Type of Disease by Census Tract and Health District, Year 1976. Health Indicator Series. Allegheny County Health Department, Pa. July 1977.

can be detected and informed about the risks of their children having the disease. While there is no safe and effective treatment for sickle-cell anemia, current therapy includes massive blood transfusions (37). As with sickle-cell, children of parents who are carriers of Tay-Sachs and thalassemia traits have a 25 percent chance of inheriting the disorder. Tay-Sachs can now be detected prenatally. PKU can be detected when an infant is only a few days old, and about 90 percent of the infants born in the U.S. are being screened for this disease. While the prevalence of hypertension is higher among blacks and whites, (see chapter on chronic diseases,) controversy as to the relative significance of genetic factors in the risk of hypertension continues (37).

Gonorrhea

Incidence of Gonorrhea per 100,000 Population, by Sex and Race
Allegheny County, Pennsylvania, 1975

Figure 14.



Source: Veneral Disease in Allegheny County, Pennsylvania by Age and Type of Disease by Census Tract and Health District, Year 1976. Health Indicator Series. Allegheny County Health Department, Pa. July 1977

Table 1

Out of Wedlock Births per 1,000 Unmarried Women Aged 15-19, by Race: 1960 and 1974

	Total	White	Nonwhite
1960	15.3	6.6	76.5
1974	23.2	11.1	88.8

Source: Adolescent Pregnancy and Childbearing—Growing Concerns for Americans. Population Bulletin. Vol. 13, No. 2, September 1976

Table 2

Low birth weight ratios among live-born infants by race, age of mother and marital status: 34 reporting States and the District of Columbia, 1967
(Excludes birth weight not stated.)

Race and age of mother	Total	Married	Not Married	Marital Status unknown
Percent				
All races	8.2	7.6	18.6	8.7
Under 15 years	18.1	14.0	19.0	*
15-19 years	10.5	9.4	13.8	13.0
20-24 years	7.6	7.1	12.5	7.8
25-29 years	7.1	6.9	12.9	8.1
30-34 years	7.8	7.5	14.8	6.5
35 years and over	8.9	8.5	16.2	8.8
White	7.0	6.8	10.2	7.1
Under 15 years	13.5	14.8	12.6	*
15-19 years	8.5	8.3	9.5	10.7
20-24 years	6.6	6.4	9.9	6.1
25-29 years	6.4	6.3	10.6	6.8
30-34 years	6.8	6.7	12.4	5.2
35 years and over	8.0	7.9	16.2	*
Black	13.9	12.8	16.0	17.8
Under 15 years	20.2	*	20.7	*
15-19 years	15.9	15.0	16.5	*
20-24 years	13.3	12.6	14.9	*
25-29 years	12.4	11.8	14.7	*
30-34 years	12.8	12.1	16.3	*
35 years and over	12.9	12.3	16.1	*
Other	9.0	8.6	12.2	*
Under 15 years	*	*	*	—
15-19 years	11.2	10.4	13.2	*
20-24 years	8.9	8.4	12.3	*
25-29 years	7.9	7.9	*	*
30-34 years	9.2	9.2	*	—
35 years and over	9.2	8.7	*	*

*Ratio not computed; less than 200 live births with birth weight stated.

Source: Helen C. Chase, Trends in Low Birth Weight Ratios. United States and Each State, 1950-68, U.S. Department of Health, Education and Welfare, Public Health Service, Health Services and Mental Health Administration, Rockville, MD. June 1973

Table 3

Annual infant mortality rates by race of child and marital status by age of mother:
United States, 1964-66

Race of child and married status	Age of mother					
	Total	Under 20 years	20-24 years	25-29 years	30-34 years	35 years and over
Rate per 1,000 live births						
Total	24.4	31.5	21.3	22.6	24.5	29.0
Wedlock	23.0	29.9	20.5	21.5	22.9	27.0
Out of Wedlock	39.9	37.2	31.5	45.5	58.4	71.4
White	21.3	25.9	19.2	19.4	22.4	26.2
Wedlock	20.8	25.2	18.9	19.2	21.5	24.9
Out of Wedlock	34.2	31.1	25.8	31.0	*	*
Black	41.0	48.4	34.8	44.2	35.7	42.8
Wedlock	39.5	55.2	34.1	41.5	31.9	37.2
Out of Wedlock	44.5	42.0	36.5	54.3	52.9	*

Source: National Center for Health Statistics: "Infant Mortality Rates by Legitimacy Status, United States, 1964-66," Supplement to *Monthly Vital Statistics Report*, Vol. 20, No. 5.

Table 4

Infant Mortality by Risk Category,¹ Ethnic Group: New York City, 1968 Live Birth Cohort

Risk category and type of medical service	Rate per 1,000 live births					
	Total	White native- born	foreign- born	Puerto Rican	Black native- born	All others
Total	21.6	14.9	15.2	25.2	35.1	23.8
No risk	11.9	9.4	9.2	17.4	19.8	17.2
Sociodemographic risk only	24.4	16.6	13.0	23.0	33.6	25.7
Medical-obstetric risk only	27.3	24.1	26.0	28.1	41.5	20.4
Sociodemographic and medical-obstetric risk	41.6	35.9	26.6	38.0	53.7	40.7
Ratio: general to private service						
Total	2.2	2.3	1.5	1.4	1.5	1.3
No risk	2.0	2.2	1.9	1.1	1.1	1.3
Sociodemographic risk only	1.9	1.9	1.7	(2.1)	1.2	(1.0)
Medical-obstetric risk only	1.7	2.0	(1.3)	(1.7)	(1.7)	(1.3)
Sociodemographic and medical-obstetric risk	1.6	2.0	1.0	(1.1)	(1.5)	(1.0)

Source: Helen C. Chase, A Study of Risks, Medical Care and Infant Mortality, *American Journal of Public Health*, Supplement, Vol. 63, September 1973.

Table 5

Percent distribution of currently married U.S. women aged 15-44*, by current contraceptive practice, according to race and age 1973,† 1970‡

Race and contraceptive practice	Age 15-44	
	1973	1970
All races		
U.S. total (in 000s)**	26,646	25,577
No. in Sample††	7,566	5,884
Percent not using contraception	30.3	34.9
Percent using contraception‡‡	69.7	65.0
Wife sterilized	8.6	5.5
Husband sterilized	7.8	5.1
Pill	25.1	22.3
IUD	6.7	4.8
Diaphragm	2.4	3.7
Condom	9.4	9.2
Withdrawal	1.5	1.4
Foam	3.5	3.9
Rhythm	2.8	4.1
Douche	0.6	2.1
Other	1.3	2.9
Percent total	100.0	100.0
White		
U.S. total (in 000s)	24,249	23,220
No. in sample	5,301	4,972
Percent not using contraception	29.3	34.3
Percent using contraception	70.7	65.7
Wife sterilized	8.2	4.9
Husband sterilized	8.4	5.5
Pill	25.1	22.4
IUD	6.6	4.8
Diphragm	2.5	3.8
Condom	10.0	9.7
Withdrawal	1.6	1.5
Foam	3.5	4.0
Rhythm	2.9	4.4
Douche	0.5	1.9
Other	1.4	2.8
Percent total	100.0	100.0
Black		
U.S. total (in 000s)	2,081	2,031
No. in sample	2,197	782
Percent not using contraception	39.7	40.8
Percent using contraception	60.3	59.2
Wife sterilized	14.0	11.4
Husband sterilized	1.0	0.6
Pill	26.3	22.1
IUD	7.6	4.5
Diaphragm	1.2	3.1
Condom	3.2	4.0
Withdrawal	0.4	0.4
Foam	3.0	3.6
Rhythm	0.8	1.0
Douche	1.8	4.7
Other	1.0	3.7
Percent total	100.0	100.0

*In 1970, includes 3 women under 15. †Preliminary data from the NSFG Cycle 1, 1973, of the NCHS. ‡Data from the 1970 NFS. **Population estimates for 1970 and 1965 were derived by interpolation from the 1970 and 1971 Bureau of the Census Current Population Surveys (CPS) of the population by marital status. Estimates for 1965 were similarly derived from 1965 and 1966 CPS data. Estimates for 1973 were projected from the 1970-1973 CPS. ††These are unweighted numbers.

‡‡Multiple methods were assigned hierarchically to the pill, IUD, diaphragm or condom if one of these methods was involved in the multiple usage. Other multiple method use was classified in the "other" category. The contraceptive practice of a very small number of couples in 1973 has been recoded in order to increase comparability with procedures followed in the 1965 and 1970 studies. Note: Percents may not add to totals because of rounding.

Source: Charles F. Westoff, Trends in Contraceptive Practice: 1965-1973 Family Planning Perspectives, Vol. 8, No. 2, 1976.

References

1. Gabriel Stickle, Paul Ma. Pregnancy in Adolescents: Scope of the Problem. Contemporary Ob/Gyn, June 1975.
2. Adolescent Pregnancy and Childbearing—Growing Concerns for Americans. Population Bulletin, Vol. 13, No. 2, September 1976.
3. Melvin Zelnik and John F. Kantner. Sexuality, Contraception and Pregnancy Among Young Unwed Females in the United States, Research Reports, Vol. 1, Commission on Population Growth and the American Future; U.S. Government Printing Office, 1972.
4. Trends in Illegitimacy, United States—1940-1965, Vital and Health Statistics, Series 21—Number 15, U.S. Department of Health, Education and Welfare, National Center for Health Statistics, Rockville, Md., December 1974.
5. Health United States 1975, U.S. Department of Health, Education and Welfare, Publication No. (HRA) 76-1232.
6. W. Pratt: Premarital Pregnancy in a Metropolitan Community (Paper presented at the 1965 meeting of the Population Association of America). Cited in Trends in Illegitimacy United States 1945-1965 (3).
7. Factors Relating to Problems of Childbirth and Infancy in Allegheny County by Ward, Municipality, Census Tract and Health District. Year 1976, Health Indicator Series, Allegheny County Health Department Division of Biostatistics, Pittsburgh, Pa., July, 1977.
8. Joseph Garfinkel, Marion Johnson Chabot, and Margaret W. Pratt. Infant, Maternal and Childhood Mortality in the United States 1968-1973. U.S. Department of Health, Education and Welfare, DHEW Publication No. (HSA) 75-5013, 1975.
9. Department of Health, Education and Welfare; Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics, Vol. 25, No. 11, 1975
10. Socioeconomic Issues of Health 1975-76. Center for Health Services Research and Development. American Medical Association, Chicago 1976.
11. William Schaffner, Charled F. Federspiel, Mary L. Fulton, Donna G. Gilbert and Lee B. Stevenson, Maternal Mortality in Michigan: An Epidemiological Analysis, 1950-1971. American Journal of Public Health, Vol. 67, No. 9. September 1977.
12. Willard Cates, Jr., and Roger W. Roach, Illegal Abortions in the United States: 1972-1974. Family Planning Perspectives, Vol. 8, No. 2, March/April 1976.
13. Helen C. Chase, Trends in Low Birth Weight Ratios. United States and Each State, 1950-86, U.S. Department of Health, Education and Welfare, Public Health Service, Health Services and Mental Health Administration, Rockville, Md. June 1973.
14. Gabriel Stickle, The Health of Mothers and Babies: How Do We Stack up? Address presented at the Fifth National Volunteer Leadership Conference, National Foundation—March of Dimes, In New Orleans, Dec. 1, 1976.

15. Helen C. Chase, A Study of Risks, Medical Care and Infant Mortality, American Journal of Public Health, Supplement, Vol. 63, September 1973.
16. Abortion Surveillance 1975, U.S. Department of Health, Education and Welfare, Public Health Service, Center for Disease Control; Bureau of Epidemiology, Family Planning Evaluation Division, Atlanta, Ga. April 1977.
17. Unpublished paper on abortions in Allegheny County, 1969-1973. Population Program, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, 1975.
18. Paul E. Ryser, John C. Cutler and John E. Grice, Changes in Attitudes toward abortion 1965-1973. Paper presented at the 102nd annual meeting of the American Public Health Association, Maternal and Child Health Section; New Orleans, October 1975.
19. William Ray Arney and William H. Trescher: Trends in Attitudes Toward Abortion, 1972-1975, Family Planning Perspectives, Vol. 8, No. 3, May/June 1976.
20. Paul E. Ryser, Leonard E. Lafe and Rachel Berg, Racial Differences in Abortion Seeking. Contraception. Vol 12, No. 2, August 1975.
21. Facts: 1977. The National Foundation March of Dimes, 1976.
22. Department of Health, Education and Welfare, National Center for Health Statistics. Monthly Vital Statistics Report, Vol. 24, No. 13 June, 1976.
23. Family Size and the Black American, Population Bulletin, Vol. 30, No. 4, 1975
24. Charles F. Westoff. Trends in Contraceptive Practice: 1965-1973 Family Planning Perspectives, Vol. 8, No. 2, 1976
25. Norman B. Ryder, The Specification of Fertility Planning Status. Family Planning Perspectives, Vol 8, No. 6, Nov./Dec. 1976
26. Robert H. Weller. Number and Timing Failures Among Legitimate Births in the United States: 1968, 1969 and 1972. Family Planning Perspectives, Vol. 8, No. 3, May/June 1976
27. Data and Analysis for 1976 Revision of DHEW Five-Year Plan for Family Planning Services. The Alan Guttmacher Institute, New York, 1976.
28. 1975 Patient Statistics. Planned Parenthood Federation of American
29. The Alan Guttmacher Institute, Organized Family Planning Services in The United States: FY 1975. Family Planning Perspectives, Vol. 8, No. 6, Nov./Dec. 1976
30. An Unmentionable Epidemic, Editorial, The Washington Post, April 30, 1977.
31. Venereal Disease in Allegheny County, Pennsylvania by Age and Type of Disease by Census Tract and Health District, Year 1976. Health Indicator Series. Allegheny County Health Department, Pa., July 1977.
32. National Association for Retarded Citizens, Fact Sheet, February 1974.
33. Mr 68. The Edge of Change. A Report to the President on Mental Retardation Program Trends and Innovations, with Recommendations on Residential Care, Manpower and Deprivation. 1968
34. Barbara D. Bateman. The Amelioration of Mental Deficiency, in The Genetic, Metabolic and Developmental Aspects of Mental Retardation, Robert F. Murray and Pearl Lockhart Rosser (eds.), Charles C. Thomas, Springfield, Ill. 1972
35. Sickle Cell Education Program. Final Report of the National Urban League, Inc. September, 1976.
36. What do you know about PKU? U.S. Department of Health, Education and Welfare, Publication No. (HSM) 73-5703, 1971
37. "The Health of America's Nonwhite Population, Status Report and Future

Plans for Dealing with Diseases More Prevalent or Severe in Nonwhites." Department of Health, Office of Program Planning and Evaluation, November 11, 1971. (Unpublished Document).

List of Figures

Figure 1 Percent of Live Births to Women under Age 20, U.S.A. 1950-1973. 58

Figure 2 Birth Rates of U.S. Teenage Women by Age and Race: 1974 59

Figure 3 Estimated Out of Wedlock Rates by Color: United States, 1940, 1950, 1955-65 (Semilogarithmic Scales) 60

Figure 4 Maternal mortality rates per 100,000 live births, by color: United States, 1916-72 61

Figure 5 Low birth weight ratios among live-born infants by color: United States, 1950-68 62

Figure 6 Per cent of neonates weighing 5-1/2 pounds or less, by trimester in which mothers began prenatal care, 42 states and the District of Columbia, 1974 63

Figure 7 Percent distribution of live births by month of pregnancy prenatal care began, by race: Total of 33 reporting States and the District of Columbia 1973 64

Figure 8 Infant mortality rates by color, 1925-74 65

Figure 9 Infant mortality rates by specified race: United States, 1974 65

Figure 10 Percent changes in Types of Contraceptives Used by Married Couples, by Race, 1965 and 1970 67

Figure 11 Total Births Expected per 1,000 Wives, by Race and Age Group, 1971 and 1974 68

Figure 12 Reported Venereal Disease Rates per 100,000 population by Race United States, 1956 and 1967-1970. 70

Figure 13 Incidence of Primary and Secondary Syphilis per 100,000 Population by Sex and Race, Allegheny County, Pennsylvania 1975 71

Figure 14 Incidence of Gonorrhea per 100,000 Population by Sex and Race, Allegheny County, Pennsylvania, 1975 71

List of Tables

Table 1 Out of Wedlock Births per 1,000 Unmarried Women Aged 15-19, by Race: 1960 and 1974 72

Table 2 Low birth weight ratios among live born infants by race, age of mother and marital status: 34 reporting States and the District of Columbia, 1967 72

Table 3 Annual infant mortality rates by race of child and marital status by age of mother: United States, 1964-66 73

Table 4 Infant Mortality by Risk Category, 1 and Ethnic Group: New York City, 1968 Live Birth Cohort 73

Table 5 Percent distribution of currently married U.S. women aged 15-44, by current contraceptive practice, according to race and age, 1973, 1970 74

Chapter V

Acute Disease Conditions

Contents

A. Overview	81
B. Introduction	81
C. Incidence of Acute Conditions	82
D. Medical Care Utilization and Health Status	82
Physician Visits	83
Outpatient Department Visits	83
Inpatient Hospitalization	84
Surgical Procedures	84
E. Mortality from Acute Conditions	85
References	94
List of Tables	95

Chapter V

Acute Disease Conditions

A. Overview

The analyses to determine whether the health status of the disadvantaged differ greatly from the health status of the advantaged, with respect to acute disease conditions, resulted in a diffuse picture. A national study shows an increase in the incidence of acute illness with income, while a local study showed the reverse. When the national study findings are disaggregated by race and sex, inversions occur again: the highest incidence of acute conditions is reported among the highest income whites and among the lowest income racial minority groups. Among racial minorities, the highest incidence is reported by the highest income males and the lowest income females.

A greater number of whites seek health care for acute conditions through private physician office visits than do racial minorities. On the other hand, racial minorities seek health care for their acute conditions, in greater numbers, through hospital out-patient visits. It is well known that the disadvantaged usually use hospital emergency rooms and outpatient departments for the types of ambulatory care for which the advantaged, usually, use private physician office visits. The data do not allow complete analyses, but it could well be that the only difference between the advantaged and the disadvantaged is the locale of treatment. That is, the visit rate for health care for acute conditions, irrespective of treatment source, may be the same for both groups. Inpatient hospital utilization for acute conditions has been greater for whites than for racial minorities over the years. Since utilization is increasing much more rapidly among racial minorities than among whites, the differences between the groups are lessening rapidly.

The only surgical procedure analyzed was appendectomies. Again, there has been a disparity between whites and racial minorities, with a greater appendectomy rate being experienced by whites. A large increase in the rate of appendectomies for racial minorities has occurred, resulting in a smaller although still substantial, difference in rates between the two groups. Since there did not appear to be a large decline in the death rate to acute appendicitis among the disadvantaged, it could be that this change, merely, reflects an increase in the rate of unnecessary surgery among the disadvantaged that the advantaged had previously been subjected.

Mortality rates were analyzed for the three most frequent categories of acute conditions causing death: cirrhosis of the liver, influenza, and pneumonia. Influenza and pneumonia death rates of nonwhites have decreased at a faster rate than death rates of whites, indicating that while the health status of the disadvantaged has been much worse as far as these two conditions have been concerned, the gap has been narrowing drastically. If death rates for nonwhites continue to decline in the next decade, as they did in the last decade, the difference in rates among these groups will be considerably smaller.

An entirely different picture is demonstrated by cirrhosis, however, where the trend has been for other indicators of health status to be improving for the nation at large, but at a faster rate for disadvantaged persons. With cirrhosis, the trend has been just the reverse. The nation, at large, seems to be having an increasing incidence of death due to cirrhosis, with racial minorities experiencing much more rapid growth with this health problem. In 1950, the non-white death rate for this condition was lower than that of

the total population. By the late 1950's, racial minorities, as a group, started to pass the whites, and now have death rates almost twice that of the white group.

In summary, for most acute conditions, it appears that access to ambulatory health care may be the same for advantaged and disadvantaged groups, and that previous disparities for inpatient care are lessening. It also appears that disparities between incidence rates in these groups, previously indicating a poorer health status among the disadvantaged, are lessening, and that the differences have become substantially smaller for some conditions.

B. Introduction

Advances in American medicine and public health in the first half of the 20th century resulted in substantial reductions in morbidity and mortality from many acute disease conditions. Although chronic disease conditions, especially heart disease, cancer, and stroke are leading causes of death and morbidity in the United States today, certain acute disease conditions continue to be health problems. Pneumonia and influenza, for example, are among the leading causes of death, and upper respiratory infections are responsible for considerable morbidity.

Two indications of the extent of incidence in the population are reported incidence of acute disease conditions and physician visits, because of acute diseases. The incidence of acute conditions in 1975 was 195.9 cases per 100 persons (1, p. 1). Among the 15 most common conditions for which visits to office-based physicians were made during the period of May 1973 to April 1974, acute conditions represented 29.6 percent of all such visits (2, p. 25).

This chapter will present available acute disease data about the medically disadvantaged, in order to determine the relative health status of this group with that of the total population at one point in time and over time. The most common acute conditions will be discussed, with the exclusion of those acute conditions that are discussed in separate chapters. Those acute conditions that are excluded in this chapter are accidents and injuries, disorders of pregnancy, and dental conditions.

C. Incidence of Acute Conditions

The National Health Interview Survey (HIS) methodology defines acute conditions as those illnesses and injuries of less than three months duration for which medical attention was sought, or which resulted in restricted activity. Those conditions which meet the above criteria, but are generally considered chronic, are excluded. These chronic conditions are listed in each HIS publication on acute conditions as are the "International Classification of Disease, Adapted for Use in the U.S." (ICDA) codes for acute conditions (1).

The medical attention and restricted activity criteria are used, in part, to eliminate very minor acute conditions which have little or no impact on the respondent. The effect of these criteria, however, may introduce a socioeconomic bias in the data. Persons who are not aware that symptoms indicate a need for care, or who lack the income to pay for care, may be less likely to obtain care for the same type of illness as would a less disadvantaged person. Keeping in mind the possible bias of the data, an attempt will be made to determine from available data the position of the disadvantaged vis-a-vis total acute disease incidence.

Data on acute conditions and socioeconomic level are presented in Tables 1a and 1b from the 1973 National Health Interview Survey (HIS), and from a household survey conducted in Dane County, Wisconsin, in 1972. There were some important methodological differences between these studies. For example, the Dane County study includes acute episodes

that were caused by chronic disease conditions, while HIS excludes those conditions. Also Dane County reports *persons* with acute episodes, while NHS reports *conditions* per 100 persons. These two differences in the data collection and presentation, plus the fact that Dane County is a rural area, presents some difficulties in the comparison of their findings. The fact that the relationship between acute conditions and income is reversed in the two studies, however, deserves further attention. Incidence *decreases* with income in Dane County and *increases* with income in HIS. That such contradictory results were obtained in the two surveys suggests that alternative methods of presenting these data should be considered. Some alternative methods are discussed below.

In Table 2, acute condition incidence is presented by sex, race, and age for the U.S., using 1973 HIS data. First, incidence of reported acute conditions at all income levels and in each age and sex group are higher among whites, 180.9 conditions per 100 persons for total persons, than among races other than white, 135.1 conditions per 100 persons. Second, although the total persons acute condition incidence is higher among high income persons, 183.4 conditions per 100 persons than among low income persons, 163.8 conditions, this relationship changes when rates are observed for each race and sex separately. Among whites, for instance, the highest incidence is reported by the lowest income group, while among races other than white, the highest incidence is reported by the lowest income group. Considering nonwhite males and nonwhite females, separately, differences are again observed. Among nonwhite males, the highest incidence is reported by the highest income group, but among nonwhite females, the highest incident is reported by the lowest income group.

Rabin and Schach (3), in their investigation of morbidity in Baltimore, also, found that, with respect to the "mild" acute conditions, little difference between socio-economic

groups could be demonstrated. It was only in the area of "severe" illness that an inverse relationship between income levels and incidence was apparent.

As mentioned earlier in this section, the restricted activity and medical attention criteria, employed by HIS in eliciting acute conditions from respondents, may result in lower reporting of these conditions by low income persons, who do not seek medical attention for less severe acute conditions, because of lack of funds or medical awareness, but who are more likely to report and seek medical attention for more severe conditions.

These reporting biases alone, however, may not be responsible for the inversions in the relationship between income and acute disease incidence that occur among sub-groups of the population. A more consistent relationship between income and acute disease incidence may be found if data are analyzed in the following ways. First, mild acute conditions should be analyzed separately from severe acute disease conditions. The latter type of condition may be less subject to under-reporting among the disadvantaged, because of failure to seek medical care. Second, the relationship between acute conditions and income should be analyzed after adjustments are made, for what appear to be differences in risk among age and sex groups. The last year that HIS published acute disease data by race was 1973, and several years' data should be observed to determine whether a more detailed analysis might be meaningful. We cannot conclude that there is a relationship between the incidence of acute illness and socioeconomic status, or if there is, what that relationship is, until further analysis is possible.

D. Medical Care Utilization and Health Status

The frequency with which people seek medical care, either by visiting an office-based physician, an outpatient department of a hospital, or by inpatient hospitalization, is at once an indication of health needs met, and, also, a measure of health status.

Although utilization of health services is definitely related to the incidence of illness and, therefore, health status, the relationship is completely reliable only under conditions of equal access among all members of the population.

LuAnn Aday and Ronald Andersen (4), in addition to developing an elaborate definition of access to medical care, have created a measure which relates utilization of health services to need for health services, and they have observed that measure among various population groups. The measure is referred to as the use-disability ratio of two measures, a utilization measure divided by an illness or health care needs measure. Although not a perfect measure, the use-disability measure is an attempt to assess differential health service utilization, among persons with similar health care needs. As expected, the use-disability ratio was found to be higher for whites than racial minorities, in several applications.

In the discussion which follows, the utilization rates, although indicative of health status, are not synonymous with health status, since in any comparison among groups, especially disadvantaged groups, the limited access to health care of those groups must be considered. However, any observed increases in utilization among the disadvantaged may be interpreted as improvements in access to the health system by the disadvantaged. In addition, those conditions for which utilization has increased among the disadvantaged are indicative of the most prominent health needs among this group.

Physician Visits. In Table 3, the number, percent, and rate of office visits for acute conditions for white and non-white races are presented. Data shown are from the National Ambulatory Medical Care Survey (NAMCS) for May 1973 to April 1974 (See Chapter II for a description of surveys). For all acute conditions included in Table 3, the physician visit rate, as measured by number of visits per 1000 population, was 12 percent higher for whites than nonwhites. Considering separate diag-

nostic groups, the visit rate for infective and parasitic conditions was only 13 percent greater for whites than nonwhites, while the nonwhite physician visit rate for influenza was twice the rate for whites.

The incidence of otitis media, another acute condition, is especially pronounced among one of the disadvantaged groups of concern, the American Indian (5). Otitis media is a reportable condition among Indians, but not the rest of the population. Therefore, rates among other racial minorities cannot be compared with those among Indians. From NAMCS data, however, which is available for 1973 only, it is known that the condition ranks tenth among the most common conditions for which office visits were made by all persons in 1973 (2, p. 25). Table 4 presents the incidence of new cases of otitis media among American Indians and Alaskan Natives.

The trend in the data shows increases over time, which may represent either increases in the incidence of the condition, or more frequent reporting of the condition. The latter case may, also, have resulted from an increase in medical care utilization among this group.

Since otitis media is commonly a complication resulting from an upper respiratory condition, the higher rate of otitis media among American Indians is partly explained by a higher incidence of upper respiratory infections among this group (6, p. 46). The higher incidence of acute respiratory disease, combined with poorer care, may in turn be causing higher rates of otitis media. This rationale affords us with, at least, a tentative explanation of the high incidence of this condition among American Indians. The effect of a high incidence of untreated otitis media is, in turn, a high frequency of chronic ear disease among American Indians (6, 7).

Outpatient Department Visits. Outpatient Department visits by diagnosis and ethnic group were obtained in a survey of 75 Blue Cross and Blue Shield hospitals in Greater New York in 1974 (8). In Table 5, total outpa-

tient visits and ethnic group are presented from this study. For all diagnoses combined, the percent of all visits for each ethnic group is highest for Blacks, 36.9 percent; slightly lower for Whites, 31.9 percent; 28.8 percent for Hispanic; and 2.5 percent for other races.

The population distribution by race of the New York SMSA and of New York City have been included in Table 5. The percent of minorities who use outpatient departments is seen to be disproportionate to their distribution in the population. For instance, the percent of Blacks in New York City in 1970 was 21.1, but the percent of outpatient department visits made by Blacks was 36.9. The percent of other racial minority outpatient visits was similar to their proportion in the population. Visits to outpatient departments by Whites, including Hispanics, was 60.7 percent, which was lower than their proportion, 76.6 percent, in the New York City population. Visits by Hispanics have been added to White visits for this population comparison, since Hispanics are included in published White population totals. A further comparison of the proportion of Hispanic outpatient visits, with their distribution in the population of the New York area, is made unduly complicated by the way in which population data of this group are presented.

For selected diagnoses which are mainly acute, a higher frequency of Black and other race visits to outpatient departments over the rates for Whites is again observed. Only 24.8 percent of visits for infective and parasitic diagnoses were made by White patients, compared with 75.2 percent by Blacks, Hispanics, and other races. For respiratory conditions, some of which may have been chronic, only 28.7 percent of all visits were made by Whites, while 71.3 percent were made by Blacks, Hispanics, and other races. Of those visits to New York outpatient departments, because of digestive conditions, 29.3 percent of all visits were made by Whites, 70.7 percent were made by persons of other

racess. This local study of outpatient department utilization follows the same trend observed in national household surveys, in which minority groups report higher utilization of outpatient clinics (9).

Inpatient Hospitalization. Hospitalization patterns were analyzed to determine what differences, if any, existed in hospital utilization rates for acute conditions by race. In Table 6, hospital utilization rates for selected acute conditions are presented by race for 1968 and 1973.

A sizeable increase occurred in hospitalization rates for acute conditions during this period for nonwhites. While for all persons an increase of 13 percent was being realized, and with a 12 percent rise being noted for whites, a close to 21 percent increase was occurring for nonwhites. This increase was mirrored by the hospital utilization rates for non-acute conditions. As can be seen from Table 6, an almost identical rise in utilization rates occurred for all conditions, with a proportionately greater rise in the rate for nonwhites. The rises in rates for nonwhites, for both acute and non-acute conditions, brought their hospital utilization to a comparable level with whites in 1973. These changes occurred with differential patterns, as far as individual diagnostic categories were concerned. Hospitalization rates for pneumonia increased among nonwhites and decreased among whites. Hospitalization rates due to intestinal and parasitic conditions, diseases of the genito-urinary system, and diseases of the skin and subcutaneous tissues, increased for both whites and nonwhites. Hospitalization rates for digestive conditions were unchanged from 1968 to 1973 for nonwhites and decreased for whites.

NCHS published the absolute number of discharges by race, but not discharge rates per population. These were calculated and are presented in Table 6. Whether absolute numbers are used, or rates per population, racial utilization is underestimated, because those discharges for whom

color is not stated must be excluded from any race breakdowns. In addition, if those for whom color is not stated include a larger percent of one race, then both the number and rate of utilization is underestimated for that race. However, if the pattern of reporting race between 1968 and 1973 has not changed drastically, then the difference in utilization rates between whites and other races from 1968 to 1973 are good estimates of the changes in utilization.

Surgical Procedures. Any observed differences in the rates of surgical procedures performed on population subgroups over time may be indicative of differences in one or more of the following: (a) utilization of the medical care system; (b) treatment patterns, necessary and unnecessary surgery; (c) the incidence of the condition; or (d) the severity of the condition among the comparison groups. A common surgical procedure, performed as a consequence of a disease condition that is acute in nature, is the appendectomy.

Numbers and rates for appendectomies are presented by race for 1971 and 1973 in Table 7. For both years, the appendectomy rate was higher for whites than for nonwhites. In 1971, 1.37 appendectomies per 1000 population were performed on whites and .93 on nonwhites. The rates for whites and nonwhites were 1.44 and 1.08 in 1973. The increase in appendectomy rate was over three times greater among nonwhites than whites, 16.1 percent, compared with 5.1 percent. While the appendectomy rate for nonwhites was 47 percent higher than that for whites in 1971, it was only 33 percent higher in 1973.

Surgical procedure rates are subject to the same possible bias as are hospital utilization rates, because race is not recorded on all discharges. (See the Acute Hospital Utilization section of this chapter for further discussion.) Assuming similar reporting patterns in 1971 and 1973, the data indicate that nonwhites experienced an increase in appendectomy rates greater than that of whites. In order to determine if the larger increase in appendectomy rates

observed among nonwhites from 1971 to 1973 represents a long term trend, data from several years are required. Since surgical procedures by race were not published in earlier years, a more complete trend analysis of surgical procedures among the two racial groups could not be carried out.

If, as it appears from these two years, there is a significant rise in appendectomies among nonwhites, an important question raised by these findings is whether or not this greater increase in utilization was accompanied by an improvement in health status. To answer this question, appendicitis mortality data are, also, included in Table 7, since appendicitis untreated by appendectomy, frequently, results in death. While the appendicitis death rate of both whites and nonwhites decreased from 1970 to 1975, the rate was consistently higher for nonwhites. From 1971 to 1973, those years in which the appendectomy rate among nonwhites increased 16 percent, the appendicitis death rate of nonwhites decreased 11 percent, while this rate decreased almost 17 percent among whites. Therefore, the greater increase in appendectomy rates among nonwhites compared with Whites was not accompanied by a greater decrease in appendicitis mortality among nonwhites compared with Whites. Despite the several data limitations already mentioned, and yearly variation of mortality rates based on a small number of deaths, this limited analysis suggests that an improvement in health status may not have been achieved by nonwhites as a result of increased utilization during this period. One explanation for this analysis of the data is that the increased number of appendectomies may be resulting in the exposure of the nonwhite population to higher levels of unnecessary surgery. A conclusion that this is the case cannot be made on the basis of the analysis presented here, but the point is important enough for a further examination of this point. In such a further examination, other diagnostic categories associated with unnecessary surgeries, such, as Tonsillectomies and Ad-

noidectomy and hysterectomies should be included.

E. Mortality from Acute Conditions

For some years now, pneumonia and influenza, both acute disease conditions, have ranked as the fifth leading cause of death after heart disease, cancer, stroke, and accidents. Age-adjusted pneumonia and influenza death rates by race and sex for the United States from 1950 to 1975 are presented in Table 8. Death rates from these causes of death have declined for all races since 1950, with a sharper decline among non-whites. Although the current death rate among non-whites is substantially higher than among whites, 23.9 compared with 15.6, the gap in death rates has narrowed over time. In 1950, the mortality color ratio was 2.48, but it declined to 1.53 in 1975. That is, the mortality rate was 148 percent higher in non-whites in 1950, and 53 percent higher in 1975.

It is unlikely that an observed rate of decrease will continue indefinitely. What occurs more frequently is large decreases in illness, or death rates, over time are followed by smaller decreases, so that the two rate curves approach each other as a limit. If we use past trends as the best predictor of future mortality rates, the following statements seem appropriate. The trend, with respect to these two causes of death, has been consistently downward, with very few exceptions since 1950, and with a considerably higher rate of decrease among racial minorities. If the rate of decrease that occurred between 1965 and 1975 for each racial group is repeated from 1975 to 1985, racial minorities will have a death rate only 18 percent higher than whites by 1985, 13.7 compared with 11.6. There is, also, the possibility that no further change may occur. It is possible that this will not occur, however, because the rate of decrease did not level off from 1965 to 1975 among racial minorities.

Influenza and pneumonia are acute disease conditions, but the contributing factors in deaths from pneumonia are chronic in nature, including pre-

existing lung disease and general debilitation. Debilitated persons may, also, be more susceptible to influenza while the disease may, also, be more severe in people with chronic illness. It may be that the change in death rates noted above is due to a lessening of the chronic conditions among non-whites. The decline in death rates among non-whites may also be due to an increase in utilization of the medical care system. And in fact, an increase in both office visits and hospitalization for respiratory conditions among non-whites was noted earlier (Tables 3 and 6).

Cirrhosis of the liver was the sixth leading cause of death in the United States in 1975. Although a certain amount of confusion surrounds classification of this condition into the acute or chronic rubrics, it is included in this chapter, partly, on the basis of the Health Interview Survey policy of listing it among acute conditions. In addition, although the condition develops over a long period of time, it goes through acute phases, which is probably when most deaths are attributed to that condition. A third reason for including it in this chapter is the reversible characteristic of the condition, which is not typical of most chronic conditions (10).

Several noteworthy features of the trend of mortality from this cause may be observed in Table 9. First, the death rate in the total population from this cause has increased steadily from 1950 to 1974, when a slight reduction occurred. The increase among non-whites was much greater than that among whites. The 1975 rate for non-whites was over three times the 1950 rate, while the 1975 rate for whites is approximately one and a half times the 1950 rate. Second, mortality from this cause was lower for nonwhites than for whites in 1950, 7.4 deaths per 100,000 population, compared with 8.6 for whites. By 1975, however, racial minorities had a rate almost twice that of whites, 23.1, compared with 12.6. Third, although the rate among men is roughly twice that of the rate among women, rates have, also, increased

among women, especially nonwhite women, since 1950. The rate for white females in 1975 was 36 percent higher than in 1950, while the rate for non-white females was 162 percent higher. An obvious hypothesis for explaining these trends is an increase in alcoholism among nonwhites, particularly women. Before concluding that this is the case, some possible data biases should be ruled out.

American Indians, a group generally considered medically disadvantaged, also, experience excessive death rates from cirrhosis of the liver, as well as pneumonia and influenza. In Table 10, age-adjusted 1971 death rates from leading causes are presented for Indians and Alaskans, for the total U.S. population, for whites, and for all other races. The mortality rate of Indians from all causes is 30 percent higher than that of the general population in the U.S. While the mortality rates for Indians and Alaskan Natives are lower for some chronic conditions, their mortality rates are almost 5 times that of the total population for cirrhosis of the liver, and almost 3 times that of all other races.

The most common form of cirrhosis, Laennec's cirrhosis, is associated with excessive intake of alcohol and with poor nutrition (7). All alcoholics do not get cirrhosis, and all people with cirrhosis are not alcoholics. Some investigators believe that the major factor in the causation of cirrhosis is dietary deficiency. According to this position, an adequate diet should prevent the severe chronic liver disorders seen in alcoholism (10, pp. 98-101). The parts played by alcoholism, nutrition, and hepatitis in the etiology of this disease are not clear-cut.

Although all persons with cirrhosis are not alcoholics, alcohol consumption is an established contributory factor in the development of this disease. Regarding socioeconomic level and drinking behavior, the results of surveys show that proportionately more people at lower socioeconomic levels are abstainers than at upper levels, and that moderate and heavier drinking increases as social class rises (10, p. 17).

The higher incidence of cirrhosis among disadvantaged groups does not seem to be explained by higher rates of heavy drinking. It seems likely that, among disadvantaged persons who are heavy drinkers, nutritional deficiencies may put them at a greater risk of developing cirrhosis than the less disadvantaged who are heavy drinkers.

Although nutritional deficiency is cited above as the most probable single factor contributing to the high death rates from cirrhosis observed among the disadvantaged, a thorough literature review and additional analyses might uncover other risk factors. While this brief analysis has not fully explained the higher death rates of racial minorities from cirrhosis, it has identified an area which deserves attention, because of the excess deaths experienced by minorities and because the situation appears to be worsening.

Table 1a

Incidence of Acute Conditions by Income and Sex, National Health Interview Survey, 1973

Income	Acute Conditions per 100 Persons		
	Both Sexes	Males	Females
<5000	163.8	160.9	165.9
5000-9999	177.7	178.7	176.8
10,000+	183.4	175.5	191.6
Not Ascertained	28.6	17.4	38.5
All Incomes	175.1	171.3	178.7

Source: Department of Health, Education, and Welfare, Health Resources Administration, *Public Health Reports*, Vol. 89, No. 6, 1974, p. 508.

Table 1b.

Percent of Persons with Acute Conditions by Income and Sex, Dane County Health Survey, 1972

Income	Percent of Persons with one or more Acute Conditions		
	Both Sexes	Males	Females
<5000	39.4	41.3	38.1
5000-9999	32.7	34.3	31.2
10,000+	32.4	30.0	34.7
All Incomes	33.0	31.4	34.6

Source: University of Wisconsin, Department of Preventive Medicine, Dane County Health Survey, Wisconsin 1973, p. 65.

Table 2

Number of acute conditions per 100 persons by sex, color, age, and family income, United States, 1973

Age and family income	Both sexes			Male			Female		
	Total	White	Other	Total	White	Other	Total	White	Other
All ages									
All family incomes ¹	175.1	180.9	135.1	171.3	177.6	126.8	178.7	184.1	142.4
Under \$5,000	163.8	170.6	143.5	160.9	171.8	128.8	165.9	169.8	154.1
\$5,000-999	177.7	186.7	124.4	178.7	190.7	109.0	176.8	183.0	139.3
\$10,000 and over	183.4	187.1	134.1	175.5	178.4	136.4	191.6	196.0	131.7
Under 17 years									
All family incomes ¹	254.0	269.7	168.6	257.4	274.6	162.1	250.4	264.6	175.2
Under \$5,000	234.3	301.1	158.6	242.1	314.4	137.1	237.6	286.2	178.6
\$5,000-9,999	247.9	266.7	162.5	254.7	280.8	139.4	240.8	252.4	187.2
\$10,000 and over	261.6	269.1	163.6	264.1	270.3	182.6	259.0	267.8	143.7
17-44 years									
All family incomes ¹	172.8	178.4	134.2	158.1	163.3	119.3	186.5	192.7	146.6
Under \$5,000	209.0	218.9	179.9	186.7	188.4	180.7	225.5	243.4	179.4
\$5,000-9,999	177.1	187.9	115.5	170.9	183.5	96.8	182.6	191.9	131.5
\$10,000 and over	169.5	172.9	130.4	153.1	156.0	118.1	185.4	189.0	142.7
45-64 years									
All family incomes ¹	102.3	104.7	80.5	92.9	95.4	69.4	110.7	113.1	89.8
Under \$5,000	101.1	105.0	86.9	70.8	91.3	(²)	108.2	112.0	94.0
\$5,000-9,999	109.3	115.7	62.1	92.6	106.4	(²)	118.1	123.2	(²)
\$10,000 and over	104.6	105.7	86.1	91.7	97.1	(²)	113.2	115.1	(²)
65 years and over									
All family incomes ¹	88.2	89.0	80.3	85.8	85.9	(²)	89.9	93.5	77.2
Under \$5,000	90.1	91.6	78.9	70.9	81.8	(²)	97.5	97.2	(²)
\$5,000-9,999	90.7	90.7	(²)	90.1	96.3	(²)	82.2	85.8	(²)
\$10,000 and over	92.8	91.4	(²)	73.1	76.7	(²)	103.7	104.4	(²)

¹Includes unknown income.²Figure does not meet standards of reliability or precision.

Note: Data are based on household interviews of the civilian, noninstitutional population.

Source: Department of Health, Education, and Welfare, Health Resources Administration, *Public Health Reports*, Vol. 89, No. 6, 1974, p. 508.

Table 3

Number, Percent, and Rate of Visits to Office-Based Physicians For Acute Conditions, by Race, 1973

Selected Diagnoses	No. of Visits (In 1000's)	% Non-white	Visits per 100 population	
			White	Non-white
Infective and Parasitic	25,233	11.4	122.1	107.2
Acute Respiratory	50,859	11.2	246.7	212.3
Influenza	5,199	23.4	21.8	45.3
Skin and Subcutaneous Tissue	34,099	10.3	167.1	130.9
Total (selected acute diagnoses)	115,390	—	557.8	495.8
All diagnoses (chronic and acute)	644,893	10.7	3146.3	2572.2

Source: Department of Health, Education, and Welfare, "The National Ambulatory Medical Care Survey 1973 Summary" Washington, D.C. Series 13, No. 21, Table 17, pp. 27-28.

Table 4

Reported New Cases of Otitis Media and Incidence Rates for American Indians and Alaska Natives Calendar Years 1962-1975

Calendar Year	American Indian and Alaskan Natives		American Indians		Alaskan Natives	
	Number of Cases	Rate per 100,000	Number of Cases	Rate per 100,000	Number of Cases	Rate per 100,000
1976 ¹	59,584	11,358.8	54,590	11,618.8	4,994	9,126.6
1975	56,569	10,784.1	51,775	11,019.7	4,794	8,761.1
1974	53,555	10,958.2	48,708	11,202.0	4,847	8,991.6
1973	58,036	12,103.6	52,999	12,429.4	5,037	9,487.1
1972	57,781	12,289.8	53,419	12,780.1	4,362	8,361.4
1971	49,478	10,742.4	45,283	11,066.9	4,195	8,159.8
1970	44,008	9,745.0	41,109	10,253.1	2,899	5,723.2
1969	39,351	8,892.3	36,568	9,313.6	2,783	5,577.3
1968	36,470	8,413.7	33,503	8,717.5	2,967	6,038.0
1967	30,211	7,118.8	27,377	7,281.0	2,834	5,857.6
1966	28,224	6,909.6	25,144	6,968.0	3,080	6,467.2
1965	22,614	5,688.2	21,502	6,131.3	1,112	2,372.6
1964	22,290	6,243.7	21,267	6,772.9	1,023	2,379.1
1963	18,397	5,211.7	17,052	5,500.6	1,345	3,127.9
1962	13,382	3,801.7	12,383	4,007.4	999	2,323.3

¹Provisional.

OPS/CRC/IHS
Vital Events Branch
January 7, 1977

Source: Trajectory of Indian Health Care

Table 5

Outpatient Department Utilization by Diagnosis and Ethnic Group, 1973

			Diagnosis							
			Total	Infec. Paras.	Endoc. Nutrit. Metab.	Mental and Nerv.	Sense Organs	Circul.	Resp	Dig- Est.
Racial Distribu- tion of Population										
Total OPD Visits			12349	350	516	786	945	878	1404	325
Not Available			696	15	31	15	73	39	92	14
Total Answering	NY SMSA	NY City	11653	335	485	771	872	839	1312	311
			100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White	82.0	76.6	3712	83	140	354	370	361	376	91
			31.9	24.8	28.9	45.9	42.4	43.0	28.7	29.3
Black	16.3	21.1	4298	111	228	253	247	335	444	117
			36.9	33.1	47.0	32.8	28.3	39.9	33.8	37.6
Hispanic			3355	133	111	151	220	134	463	92
			28.8	39.7	22.9	19.6	25.2	16.0	35.3	29.6
Other	1.7	2.2	288	8	6	13	35	9	29	11
			2.5	2.4	1.2	1.7	4.0	1.1	2.2	3.5

			Diagnosis							
			Skin and Tissue	Musc. and Connec.	Obstet. Gyn. Repro.	Misc. Symp.	Acc. Pois. Vidl.	Exam	Other	No Diag.
Racial Distribu- tion of Population										
Total OPD Visits			738	364	1387	1324	701	1910	614	107
Not Available			39	21	74	77	44	132	27	3
Total Answering	NY SMSA	NY City	699	343	1313	1247	657	1778	587	104
			100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White	82.0	76.6	260	109	208	430	220	515	174	21
			37.2	31.8	15.8	34.5	33.5	29.0	29.6	20.2
Black	16.3	21.1	225	121	543	424	256	715	231	48
			32.2	35.3	41.4	34.0	39.0	40.2	39.4	46.2
Hispanic			198	102	517	358	172	500	174	30
			28.3	29.7	39.4	28.7	26.2	28.1	29.6	28.8
Other	1.7	2.2	16	11	45	35	9	48	8	5
			2.3	3.2	3.4	2.8	1.4	2.7	1.4	4.8

Source: Blue Cross Association of Greater New York, "Highlights of Preliminary Data," Department of Research and Special Studies, ACS Report No. 1, October, 1974, p. 27.

Population Data:

SMSA's: U.S. Department of Commerce, Bureau of the Census, General Population Characteristics, New York U.S. Government Printing Office, Washington, D.C., 1971, p. 89.

NYC: U.S. Department of Commerce, Bureau of the Census, The Statistical Abstract of the U.S. 1977, Grosset and Dunlap, Publishers, New York 1976, p. 23.

Table 6

Number and Rate of Hospitalizations for Selected Acute Conditions, by Race, 1968 and 1973

Selected Acute Conditions	1968						1973					
	Number (1000's)			Rate/1000 Pop			Number (1000's)			Rate/1000 Pop		
	Total	White	All Other	Total	White	All Other	Total	White	All Other	Total	White	All Other
Infective and Parasitic (000-136)	319	238	47	1.6	1.4	1.9	790	611	97	3.8	3.3	3.6
Respiratory (460-465, 470-474, 480-486, 466)	1460	1139	144	7.2	6.5	5.9	1496	1158	171	7.1	6.3	6.4
Digestive (520-530, 540-543, 560, 561, 564, 574, 575, 570-573, 576-679)	1931	1542	143	9.6	8.8	5.8	1794	1409	155	8.5	7.7	5.8
Disease of Genito-urinary System (580-629)	2647	2059	274	13.2	11.7	11.2	3390	2579	385	16.1	14.1	14.3
Diseases of Skin and Subcutaneous Tissue (680-709)	388	299	48	1.9	1.7	2.0	514	396	62	2.4	2.2	2.3
All Acute Conditions	6745	5283	656	33.6	30.0	26.8	7984	6153	870	37.9	38.5	32.4
% Increase 68-73										12.8	11.7	20.9
All Conditions (Chronic and Acute)	28070	21629	2907	139.9	122.7	118.8	32125	24402	3619	152.7	133.0	134.6
% Increase 68-73										9.1	8.4	13.3

Source: Department of Health, Education, and Welfare, Inpatient Utilization of Short-stay Hospitals by Diagnosis, U.S. 1968, Series 13, No. 12, p. 36. And Inpatient Utilization of Short-stay Hospitals by Diagnosis, U.S. 1973, Series 13, No. 25, p. 32.

Table 7

Number and Rate of Appendectomies by Color, 1971 and 1973 and Appendicitis Mortality Rates by Color, 1970 to 1975

Year	Total Operations	Color not Stated	Operations		All other		Total	Rate ¹	Color Ratio White/All other	Appendicitis Deaths			
			White No.	Rate ¹	No.	Rate ¹				White No.	Rate ²	All other No.	Rate ²
1970										1167	0.7	230	0.9
1971	318	45	249	1.37	24	.93	318	1.54	1.47	1071	0.6	224	0.9
1972										998	0.5	208	0.8
1973	339	46	264	1.44	29	1.08	339	1.61	1.33	847	0.5	219	0.8
1974										715	0.4	149	0.5
1975										662	0.4	160	0.6
Percent change 1971-1973				5.1		16.1		4.5					

¹Rate per 1000 population.²Rate per 100,000 population.

Sources: Operations—Department of Health, Education, and Welfare, "Surgical Operations in Short-Stay Hospitals, U.S. 1971", Rockville, Maryland, Series 13, No. 18, Table 1, pp. 16-18.

Department of Health, Education, and Welfare, "Surgical Operations in Short-Stay Hospitals, U.S. 1973", Rockville, Maryland, Series 13, No. 24, Table 4, pp. 30-31.

Deaths—Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8; 1971, Vol. 23, No. 3; 1972, Vol. 23, No. 8; 1973, Vol. 23, No. 11; 1974, Vol. 24, No. 11; 1975, Vol. 25, No. 11.

Table 8

Age-adjusted death rates for Influenza and pneumonia, by color and sex: United States, 1950-69

Year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Rate per 100,000 population									
1975	16.6	22.5	12.3	15.6	21.0	11.7	23.9	33.5	16.1
1974	16.9	22.6	12.8	15.7	21.0	12.0	25.4	35.1	17.5
1973	20.1	26.6	15.2	18.5	24.6	14.0	31.4	42.3	22.5
1972	20.8	27.6	15.6	19.2	25.4	14.4	32.6	44.5	22.8
1971	19.3	24.9	14.8	17.6	22.7	13.6	32.0	43.0	22.8
1970	22.1	28.8	16.7	19.8	26.0	15.0	38.1	50.1	27.9
1969	24.6	31.3	19.1	22.3	28.4	17.3	41.9	54.8	30.9
1968	26.8	34.0	21.0	24.1	30.7	18.8	47.3	60.7	35.8
1967	20.8	26.8	15.9	18.8	24.2	14.3	36.4	47.6	26.6
1966	23.8	30.2	18.5	21.2	27.1	16.4	43.3	55.2	32.8
1965	23.4	29.8	18.2	21.0	26.9	16.1	41.7	52.3	32.3
1964	22.8	28.8	17.7	20.3	25.9	15.7	40.8	51.2	31.4
1963 ¹	27.7	34.5	21.8	24.4	30.7	19.0	55.3	66.6	45.1
1962 ¹	23.7	29.4	18.9	21.2	26.5	16.7	43.4	52.1	35.4
1961	22.1	27.6	17.4	19.8	24.8	15.5	39.6	49.6	30.5
1960	28.0	35.8	21.8	24.6	31.0	19.0	55.2	68.0	43.3
1959	23.4	28.4	18.5	20.7	25.8	16.2	44.1	53.6	35.2
1958	25.1	31.2	19.6	22.1	27.7	17.2	49.7	61.4	39.0
1957	27.9	34.1	22.3	24.5	30.5	19.3	55.3	65.0	46.4
1956	21.6	26.2	17.3	19.1	23.5	15.1	41.6	49.1	34.6
1955	21.0	25.3	17.1	18.4	22.3	14.9	42.2	50.8	33.9
1954	19.9	24.1	16.1	17.4	21.2	13.9	41.3	49.1	33.8
1953	26.3	31.6	21.3	22.7	27.5	18.2	58.6	68.6	49.1
1952	24.0	28.5	19.7	20.7	24.8	16.9	52.1	60.6	44.0
1951	25.7	30.2	21.5	22.5	26.6	18.6	54.6	62.3	47.2
1950 ²	26.2	30.6	22.0	22.9	27.1	18.9	56.9	63.4	50.6

[For 1968 and 1969 rates are based on deaths assigned to category numbers 470-474, 480-486 of the *Eighth Revision of the International Classification of Diseases, Adapted for Use in the United States*, adopted in 1965; for 1950-67 rates are based on deaths assigned to category numbers 480-483, 490-493 of the Sixth and Seventh Revisions adopted, respectively, in 1948 and 1955.

¹Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

²Based on enumerated population adjusted for age bias in the population of races other than white.

Source: (1) Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, Maryland, Series 20 No. 16, Table K, p. 30.

(2) Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8; 1971, Vol. 23, No. 3; 1972, Vol. 23, No. 8; 1973, Vol. 23, No. 11; 1974, Vol. 24, No. 11; 1975, Vol. 25, No. 11.

Table 9

Age-adjusted death rates for Cirrhosis of liver, by color and sex: United States, 1950-69

Year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Rate per 100,000 population									
1975	13.8	19.5	8.9	12.6	17.9	7.9	23.1	32.1	15.5
1974	14.8	20.7	9.7	13.4	19.0	8.6	25.0	34.0	17.4
1973	15.0	20.9	9.9	13.7	19.3	8.7	25.3	33.9	18.0
1972	14.9	20.8	9.6	13.5	19.1	8.6	25.4	35.1	17.2
1971	14.7	20.4	9.8	13.5	18.9	8.8	24.3	32.2	17.5
1970	14.7	20.2	9.8	13.4	18.8	8.7	23.8	31.3	17.4
1969	14.2	19.4	9.5	12.9	18.0	8.5	24.0	31.4	17.6
1968	14.0	19.0	9.5	12.9	17.8	8.5	22.9	29.8	17.0
1967	13.5	18.3	9.1	12.5	17.2	8.4	20.7	27.2	15.0
1966	13.0	17.8	8.7	12.1	16.8	7.9	20.4	26.6	15.0
1965	12.1	16.5	8.3	11.4	15.6	7.6	18.0	23.3	13.4
1964	11.5	15.5	7.8	11.0	15.0	7.3	15.2	19.6	11.3
1963 ¹	11.2	15.1	7.7	10.7	14.7	7.2	13.9	17.1	*11.0
1962 ¹	11.0	15.1	7.4	10.5	14.6	6.8	13.8	16.8	11.0
1961	10.6	14.5	7.1	10.3	14.2	6.7	12.8	15.9	9.9
1960	10.5	14.5	6.9	10.3	14.4	6.6	11.9	14.9	9.1
1959	10.1	13.8	6.7	10.0	13.7	6.4	11.3	13.7	9.1
1958	9.9	13.6	6.5	9.9	13.7	6.3	9.9	12.5	7.4
1957	10.5	14.4	6.8	10.4	14.4	6.6	10.8	13.4	*8.4
1956	9.9	13.3	6.6	9.8	13.4	6.5	9.7	11.8	7.8
1955	9.4	12.7	6.2	9.4	12.9	6.1	8.5	10.3	6.8
1954	9.2	12.6	6.1	9.3	12.8	6.0	8.1	9.8	6.5
1953	9.5	12.8	6.4	9.6	13.0	6.4	8.1	10.0	*6.3
1952	9.5	12.8	6.2	9.5	13.0	6.2	8.1	10.6	*5.7
1951	9.1	12.1	6.2	9.2	12.3	6.2	8.1	9.9	6.3
1950 ²	8.5	11.4	5.8	8.6	11.6	5.8	7.4	9.0	*5.9

[For 1968 and 1969 rates are based on deaths assigned to category number 571 of the *Eighth Revision of the International Classification of Diseases, Adapted for Use in the United States*, adopted in 1965; for 1950-67 rates are based on deaths assigned to category number 581 of the Sixth and Seventh Revisions adopted, respectively, in 1948 and 1955.]

¹Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

²Based on enumerated population adjusted for age bias in the population of races other than white.

NOTE: Asterisk indicates age-adjusted rates where more than half of the age-specific rates are based on fewer than 20 deaths.

Source: (1) Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69," Rockville, Maryland, Series 20, No. 16, Table P, p. 41.

(2) Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8; 1971, Vol. 23, No. 3; 1972, Vol. 23, No. 8; 1973, Vol. 23, No. 11; 1974, Vol. 24, No. 11; 1975, Vol. 25, No. 11.

Table 10

Age-adjusted Death Rates (per 100,000 population)
 American Indians and Alaskan Natives in 24 Reservation States Compared to U.S.
 Calendar Year 1971

	Indian Health Service	U.S. ¹ Total	White	All Other	Ratio of IHS to U.S.
All Causes	935.5	730.9	694.4	1,046.2	1.3
Major cardiovascular diseases	251.1	352.0	341.4	457.9	0.7
Diseases of heart	182.6	262.3	257.1	312.8	0.7
Cerebrovascular Disease	32.8	68.5	63.8	124.1	0.5
Arteriosclerosis	12.0	9.2	9.2	9.1	1.3
Hypertension	2.6	3.0	2.4	9.5	0.9
Accidents	183.0	55.3	52.6	75.5	3.3
Motor Vehicle	96.5	28.5	27.9	33.7	3.4
All Other	86.5	26.8	24.8	41.8	3.2
Malignant Neoplasms	84.4	129.7	126.8	158.6	0.7
Cirrhosis of Liver	66.8	14.2	12.9	24.0	4.7
Influenza and Pneumonia	41.6	24.6	22.3	41.9	1.7
Diabetes Mellitus	31.7	14.5	13.2	27.7	2.2
Tuberculosis, all forms	10.6	2.3	2.8	8.0	4.6
Bronchitis	6.6	12.0	12.0	10.0	0.6

¹1969 rates (latest available)

Source: Department of Health, Education, and Welfare, Public Health Service, "Indian Health Trends and Services," 1974 Edition, Table 4.2, p. 33.

References

1. National Center for Health Statistics: Acute conditions incidence and associated disability, United States, July 1974-June 1975. DHEW publication No. (HRA) 77-1541, Ser. 10, No. 114. U.S. Government Printing Office, Washington, D.C., February 1977.
2. National Center for Health Statistics: The National Ambulatory Medical Care Survey: 1973 Summary, United States, May 1973-April 1974. DHEW Publication No. (HRA) 76-1772. Ser. 13, No. 21. U.S. Government Printing Office, Washington, D.C., October 1975, Table 16.
3. Rabin, D. L., Schach, E.: Medicaid, Morbidity and Physician Use. *Medical Care*, Vol XIII, No. 1, January, 1975.
4. Aday, L., and Andersen, R.: Access to medical care. *Health Administration Press*, Ann Arbor, Michigan, 1975. pp. 38-43.
5. Axelsson, A. and Lewis, C.: Aspects on delivery of ear, nose, and throat care to Montana Indians. *Public Health Rep.* 89:551-557, November - December 1974.
6. National Institutes of Health: The health of America's nonwhite population, status report and future plans for dealing with disease more prevalent or severe in nonwhites. Department of Health, Education, and Welfare, Washington, D.C., November 11, 1971 (Unpublished document).
7. Social Security Administration: Standards for good medical care. DHEW Publication No. (SSA) 75-11926. U.S. Government Printing Office, Washington, D.C., February 1975.
8. Blue Cross Association of Greater New York: Highlights of preliminary data. Department of Research and Special Studies, ACS Report No. 1, October, 1974.
9. Andersen, R., Lion, J., and Anderson, O.: Two decades of health services: Social survey trends in use and expenditures. Ballinger Publishing Company, Cambridge, Massachusetts, 1976.
10. National Institute on Alcohol Abuse and Alcoholism: Alcohol and health, new knowledge. Preprint Edition. Alcohol, Drug Abuse, and Mental Health Administration. U.S. Government Printing Office, Washington, D.C., June 1974. pp. 98-101.

List of Tables

Table 1a. Incidence of Acute Conditions by Income and Sex, National Health Interview Survey, 1973 **86**

Table 1b. Percent of Persons with Acute Conditions by Income and Sex, Dane County Health Survey, 1972 **86**

Table 2. Number of Acute Conditions per 100 Persons by Sex, Color, Age, and Family Income, United States, 1973 **87**

Table 3. Number, Percent, and Rate of Visits to Office-Based Physicians for Acute Conditions, by Race, 1973 **88**

Table 4. Reported New Cases of Otitis Media and Incidence Rates for Indians and Alaska Natives, 1962 to 1975 **88**

Table 5. Outpatient Department Utilization by Diagnosis and Ethnic Group, 1973 **89**

Table 6. Number and Rate of Hospitalizations for Selected Acute Conditions, by Race, 1968 and 1973 **90**

Table 7. Number and Rate of Appendectomies by Color, 1971 and 1973 and Appendicitis Mortality Rates by Color, 1970 to 1975 **90**

Table 8. Age-Adjusted Death Rates for Influenza and Pneumonia, by Color and Sex: United States, 1950-60 **91**

Table 9. Age-Adjusted Death Rates for Cirrhosis of Liver, by Color and Sex: United States, 1950-69 **92**

Table 10. Age-Adjusted Death Rates, Indians and Alaskan Natives in 24 Reservation States Compared to U.S. Calendar year 1971 **93**

Chapter VI

Chronic Disease

Conditions

Contents

A. Overview	99
B. Introduction	100
C. Cardiovascular Diseases	100
1. Diseases of the Heart	100
2. Cerebrovascular Disease—(Stroke)	102
3. Arteriosclerosis	102
4. Hypertension	102
D. Malignant Neoplasms—(Cancer)	104
E. Diabetes	105
F. Chronic Respiratory Conditions	106
G. Other Selected Chronic Diseases	108
H. Limitation of Activity due to Chronic Diseases	109
References	139
List of Tables	141
List of Figures	142

Chapter VI

Chronic Disease Conditions

A. Overview

With respect to the leading chronic diseases, the health status of the disadvantaged was found to be inferior to that of the rest of the population, for the most part. Among the five leading chronic disease causes of death in 1975: heart disease, cancer, stroke, diabetes, and arteriosclerosis, the age-adjusted death rates of the disadvantaged were higher than those of the rest of the population for four of the five causes: heart disease, cancer, stroke, and diabetes.

Diseases of the heart were the leading cause of death in 1975, accounting for 38 percent of all deaths. The white population in the United States had a lower age-adjusted death rate from heart disease in 1975, 217.2 deaths per 100,000 population, compared with all other races, 245.2. The racial differential of heart disease mortality, however, has decreased slightly over time.

Cancer, the second leading cause of death in 1975, accounted for 20 percent of all deaths in the United States in that year. The age-adjusted cancer death rate for the total U.S. Population increased 4 percent between 1950 and 1975. For the white population, the increase was 3 percent during this period, but for non-whites the increase was 20 percent. Most of the cancer increase among non-whites was experienced by males. Cancer of the lung, prostate, and colon/rectum are the cancer sites with both the highest incidence and mortality. Males of races other than white experienced far greater increases in death rates from these causes than whites between 1950 and 1973. For example, the lung cancer death rate of nonwhite males was 25 percent lower than that of white males in 1950, but it was 21 per-

cent higher in 1973. A closer scrutiny of these trends, which takes into account additional years rather than two points in time only, and a more thorough analysis of the etiology of these types of cancer, might suggest what part of the increase in cancer rates among non-whites is: 1.) due to a differential in access to or in quality of health care; 2.) a differential change in personal habits; and/or 3.) changes in occupational exposure to carcinogens.

Although the incidence of breast cancer is higher at higher socioeconomic levels, the death rates from this cause are similar for white and all other females. The death rate of non-white females from this cause is catching up with that of white females. In 1973, the death rate for breast cancer among non-white females was only six percent lower than that of white females. However, the non-white rate had been 17 percent lower than the white rate in 1950. The incidence rate of cervical cancer among both white and all other females decreased between 1947 and 1969. The decrease was greater for white women, however, increasing the racial differential. In 1974, the cervical cancer incidence rate was 94 percent higher among non-white females compared with white females, but in 1969 it was 124 percent higher. Thus, the racial differential decreased.

Nonwhites not only have a higher prevalence rate of diabetes, but the racial differential has increased since 1965. More nonwhites per population see physicians for this condition than do whites, but relatively more whites are hospitalized for this condition. A substantially higher death rate from this condition is experienced by non-whites compared with whites. The death rate from diabetes is highest

among nonwhite females; it being over twice that of white females. Income has a greater impact than race on prevalence rates from this cause. While the racial differential in the prevalence of diabetes was 1.20, the income differential was 3.49.

Nonwhites report having lower prevalence rates for almost all of the 15 leading chronic respiratory conditions, excluding tuberculosis. Tuberculosis morbidity is excessive among nonwhites. Nonwhites have roughly five times the tuberculosis incidence of whites. The differential is even greater when Indian and Alaskan Native tuberculosis incidences are compared with whites. The racial mortality differential varies considerably from year to year, but it does not appear to be narrowing. Since death from this cause are relatively few in number, rates should be combined over years, in order to determine definitely whether or not a change in the differential has occurred.

Prevalence rates of other selected chronic conditions, as reported by respondents, are experienced differentially by the two racial groups, as well as among income groups. Among persons 17-44 years of age, nonwhites report a *lower* prevalence of asthma, chronic bronchitis, impairments of the spine, hearing impairments, and vision impairments. On the other hand, non-whites aged 17-44 years have a *higher* prevalence of arthritis, diabetes, and hypertension. For all of these chronic conditions, the reported prevalence rates of low income persons are higher than those of high income persons. The greatest income differential rates exist for hypertension, hearing impairments, and diabetes.

Among persons 45-64 years of age, nonwhites reported a higher pre-

valence of arthritis, asthma, diabetes, heart conditions, hypertension, impairments of the spine, and vision impairments, and lower rates of chronic bronchitis, hernia (abdominal), ulcer, and hearing impairments. Again, among persons aged 45-64, a higher prevalence of all of the above chronic conditions was found among low income persons than among high income persons.

Nonwhites report lower rates of limitations, all degrees, of activity due to chronic conditions, but more severe limitations than do whites. Differences in activity limitation due to chronic disease are greater among income groups than between racial groups. Low income persons have roughly three times the activity limitations of high income persons.

B. Introduction

Chronic disease conditions are leading causes of both morbidity and mortality in the United States today. "The increasing longevity of the population, and the resultant shift in its composition toward the older ages, have resulted in a greatly increased frequency of chronic diseases. The development of techniques that postpone death, without effecting a cure of the disease itself, has also contributed to the greater prevalence of certain conditions. Thus, increased rates of certain chronic diseases in the population may reflect more effective, rather than less effective, management of illness." (1, p. 154)

The impact of chronic disease conditions on the U.S. population in terms of morbidity and mortality is substantial. Fourteen percent of the population interviewed in 1975 in the Health Interview Survey (HIS) reported a limitation of activity due to chronic conditions (2). Almost five million (4.9) persons aged 18-64 were unable to carry on gainful employment, due to the impact of long-term illness or injury, according to the 1970 census (1, pp. 474-6). The three leading causes of death in 1975, and for the past several years, were due to chronic diseases.

The morbidity data presented in this chapter were obtained primarily from the Health Interview Survey, the Health Examination Survey, and the Hospital Discharge Survey. Health Interview Survey data are based on interviews conducted in households sampled in a continuing national household interview survey, while Health Examination Survey data are based on data from professionally conducted physical examinations, testing and measurement of national samples of the population. Hospital Discharge Survey data are obtained from abstracts of hospital records from those hospitals that participated in a continuing nationwide survey of hospitals.

Data from these three surveys are extensive and valuable in drawing a picture of health characteristics of the population, as well as subgroups of the population at one point in time and over time. Any conclusions drawn from these data, however, should be tempered with an awareness of the comparative strengths and weaknesses of the different data collection methods employed.

The Health Interview Survey provides data on the widest range of illnesses and symptoms, and it includes information by several characteristics of the population and it is up-to-date. Several shortcomings, however, may result from this approach, since data are based on self-reporting rather than physical examinations. Whether or not respondents report symptoms is dependent upon both their awareness of and willingness to report symptoms and conditions. Reporting of symptoms may, also, vary according to the impact of the symptom on individuals in terms of severity, cost, and inconvenience. In addition, The Health Interview Survey allows proxy respondents to answer questions for an absent individual. In general, these factors tend to result in underreporting in the Health Interview Survey data, in comparison with the data generated by The Health Examination Survey. With the Examination Survey methodology, the physical examina-

tion frequently identifies conditions of which individuals may not have been aware prior to the examination. As a measure of the prevalence of a disease, Health Examination Survey results are more accurate and, where possible, are reported in this chapter. Use of Hospital Discharge Survey data as estimates of prevalence have the obvious drawback of being limited to only those cases of a disease condition that become hospitalized.

While the limitations of the data for the most part apply to the disadvantaged, as well as the rest of the population, in some instances under-reporting, because of undiagnosed conditions, may be higher among the disadvantaged, because of their generally lower rates of utilization of health services. (See Chapter XI, Utilization of Health Services.) These reporting biases should be borne in mind in reading this chapter.

Only the most common chronic conditions have been selected for inclusion in this chapter. The definition of chronic conditions used in this chapter coincides with those conditions considered chronic by the National Center for Health Statistics (NCHS). For the purposes of the National Health Survey, a condition is considered chronic if: 1) the condition lasts three months or more, or 2) it is among those conditions listed by NCHS, which are always considered chronic regardless of the data of onset (3).

C. Major Cardiovascular Diseases

Diseases of the cardiovascular system, i.e., the heart and the blood vessels, have been the leading cause of death in the United States for the past several years. The major cardiovascular diseases are: 1) diseases of the heart; 2) hypertension; 3) cerebrovascular diseases, stroke; and 4) arteriosclerosis. The impact of the major cardiovascular diseases on the disadvantaged are discussed separately below.

Diseases of the Heart The prevalence of heart conditions in the United States in 1972 by selected characteristics is presented in Table 1. While the prevalence rate of whites is higher than that

for all others, when all age groups are combined, nonwhites have a higher age-specific prevalence rate than all others for two age groups: 17-44 years and 45-64 years. The heart condition prevalence rate among whites was 51.7 per 1000 persons compared with a rate of 41.5 among all other races in 1972. A definite decline in the prevalence rate occurred as family income increased. The prevalence of heart conditions among persons whose family income was under \$3,000 was over three times that of persons whose family income was \$15,000 or more: 114.1 compared with 35.2. A higher rate among low income persons is to be expected, partly, because of the disproportionate numbers of older persons at low income levels. The magnitude of the difference and the proportion of elderly low-income make it difficult to explain the entire differential rate by age differences among income groups.

In this, as well as other, income comparisons, the relationship of illness with income may be confounded by the disproportionate numbers of persons who are aged at the lower income levels. For example, in 1973, 17 percent of the total population in all age groups combined were in the lowest income group, under \$5,000. Between 13 and 15 percent of all persons were in the lowest income group in all age groups under 65. Forty-eight percent of all persons 65 years and over were in the lowest income group, however. Population figures are estimates prepared by NCHS to calculate rates presented in the publication, *Profile of American Health, 1973* (4).

Heart conditions are responsible for a considerable amount of hospital utilization. Ischemic (coronary) heart disease, a major subgroup of heart disease, accounted for roughly 1.6 million discharges from short stay hospitals in 1975. (See Table 2) The hospitalization rate for heart conditions of whites, 8.4 per 1000 persons, was 58 percent greater than that of nonwhites, 4.9 per 1000 persons.

The number of percent of discharges by race are presented in Table 2, but

the rates by race were not calculated. NCHS does not calculate rates by race, because color was not stated for 4.5 million persons. While this number is larger than the 3.8 million discharges in the all other color group, it is still possible that the 4.5 million for whom color is not stated are distributed by race proportionate to the distribution in the general population. One datum that gives credence to this is that white patients outnumber all other patients by almost 7 to 1, which is the same racial ratio that exists in the civilian noninstitutionalized population (5, p.6). In addition, the hospitalization rates for whites and nonwhites are similar when all diagnoses are combined, although racial differences were found in disease specific hospital rates.

In 1975, diseases of the heart accounted for 38 percent, 716,215, of all deaths (6). The crude death rate from diseases of the heart was higher among white males, 401.1 per 100,000 population, compared with males of other races, 277.1. Similarly, white females had a higher rate than all other females, 301.3, compared with 214.7 (6). The age-adjusted death rates, in 1965, however, were lower among whites, 217.2 per 100,000 population compared with 245.2 for all other races (see Table 3). The unadjusted death rate is lower than the age-adjusted rate among all other races, because of the younger age distribution of all other persons compared with whites.

The racial differential from this cause of death has decreased over time. While nonwhites had a death rate from this cause, 13 percent higher than that of nonwhites in 1975, their rate was 25 percent higher in 1950. The death rate from heart disease decreased 28 percent among whites compared with 35 percent among nonwhites between 1950 and 1975 (See Table 4). The decrease for whites was slow and continuous over the 25 years. Although the nonwhites, also, had a steady decline during this period, a reasonably sized step, about 6 percent, occurred at the turn of the 1970 decade,

shortly after the advent of Medicaid. Age adjusted death rates and the percent change for selected years from 1950 to 1975 for the five leading chronic disease causes of death are presented in Table 4.

Several conditions are included among heart diseases, among which are rheumatic fever and rheumatic heart disease, which display downward trends both in mortality and morbidity (7, p. 243). Coronary (ischemic) heart disease accounts for most of the conditions included under diseases of the heart. Factors directly, or indirectly, related to risk of coronary heart disease are high serum cholesterol levels and hypertension. Obesity may be associated with high serum cholesterol level, hypertension, or both. Consequently, persons who are obese are at higher risk of coronary heart disease. Also, coronary heart disease occurs frequently with other diseases, especially diabetes. "Other factors apparently linked in some way to the causes of coronary disease include cigarette smoking, physical activity, and psychological stress, or reactions to stress" (7, p.246). Of the possible risk factors mentioned above, nonwhites have a higher prevalence of both hypertension and diabetes, which appear to be related to coronary heart disease, but do not on the whole have a higher level of cigarette consumption, compared with whites.

The three factors discussed so far, prevalence, hospitalization, and deaths, may be painting a picture which later investigations will have to validate. Nonwhites have higher prevalence and death rates from cardiovascular diseases; yet, they have lower hospitalization rates for those conditions. It could be that whatever the causes of the higher prevalence, some writers suggest diet as a leading one for blacks, the higher death rate is due to inadequate health care. That some of this inadequate health care stemmed from lack of access, due to financial limitations, is hinted at by the downward step function in the death rate, which occurred a few years after the inception of Medicaid. While we

cannot be certain that the remaining component is not, also, largely financial, other causes are suggested. Since attitudes and life style are contributing factors to cardiovascular diseases, programs of health education suggest themselves as possible means for accomplishing further reductions.

Cerebrovascular Disease. Cerebrovascular disease impacts on mortality rates to a far greater extent than on morbidity rates. The prevalence of cerebrovascular disease as reported in the Health Interview Surveys was 7.5 per 1000 persons. This rate was slightly higher among nonwhites: 9.1 times more than among whites, and 7.3 times at lower family income levels (See Table 5). Cerebrovascular disease accounted for 533,000 discharges from short stay hospitals in 1975, with a rate roughly similar for whites, 2.6, and nonwhites, 2.2 (See Table 2).

Cerebrovascular diseases were the third leading cause of death in 1975: heart disease and cancer ranked first and second. The death rate from this cause was 51.3 per 100,000 white persons compared with 82.0 per 100,000 for nonwhites (see Table 6). All other races had a death rate 60 percent higher than that of whites in 1975. In 1950, the racial differential was even greater, 79 percent. The decline in the death rate for nonwhites was greater than that for whites. The rate has decreased 45 percent since 1950 among nonwhites compared with a 38 percent decrease among whites.

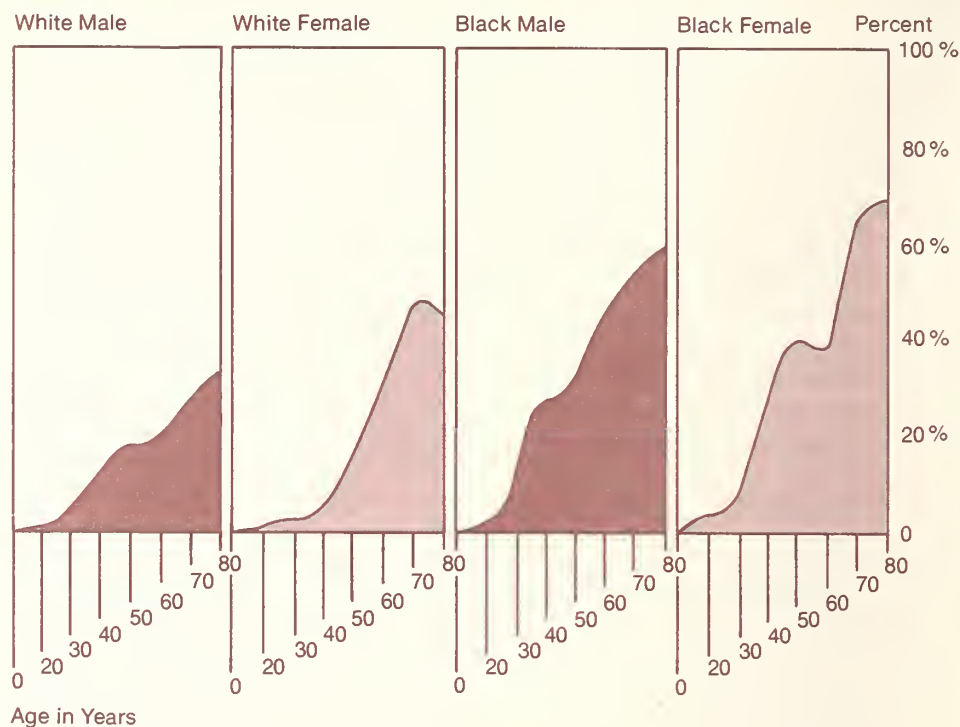
Several risk factors are associated with cerebrovascular disease, only the most prominent of which are mentioned here. There appear to be higher death rates from strokes in the Southeastern region of the United States and among Negroes (8, p.338). Persons who have high blood pressure, diabetes, or certain ECG changes are at greater risk of developing a stroke (8, p.338). As the following sections indicate, the disadvantaged seem to have higher rates of several of the risk factors associated with stroke, especially hypertension and diabetes.

Arteriosclerosis "While our knowledge concerning the exact etiologic factors

Hypertension

Percent of Adults With Definite Hypertension, by Age, Race and Sex.

Figure 1.



Source: National Center for Health Statistics: Hypertension and Hypertensive Heart Diseases in Adults, United States, 1960-1962. DHEW Publication No. (HRA) 74-1282, Series 11, No. 13. U. S. Government Printing Office, Washington, D. C., November 1973.

involved in the development of arteriosclerosis and coronary artery disease leaves much to be desired, it has long been known that, in arteriosclerosis, deposits of fat, including cholesterol, are found in the affected blood vessels." (9, p.61)

Although the death rate from arteriosclerosis is low relative to the other cardiovascular diseases discussed above, the death rate from this cause is still among the five leading chronic disease causes of death. The racial differential for this cause of death has been quite small. Both racial groups have seen a decline of approximately 60 percent in the last 26 years. The lead in deaths from this cause has passed from one racial group to the other, with the groups being apart over 1 death per 100,000 population occurring only once in the 26 years. Nonwhites took the lead in deaths from this cause in 1953, with the whites resuming the lead in 1969.

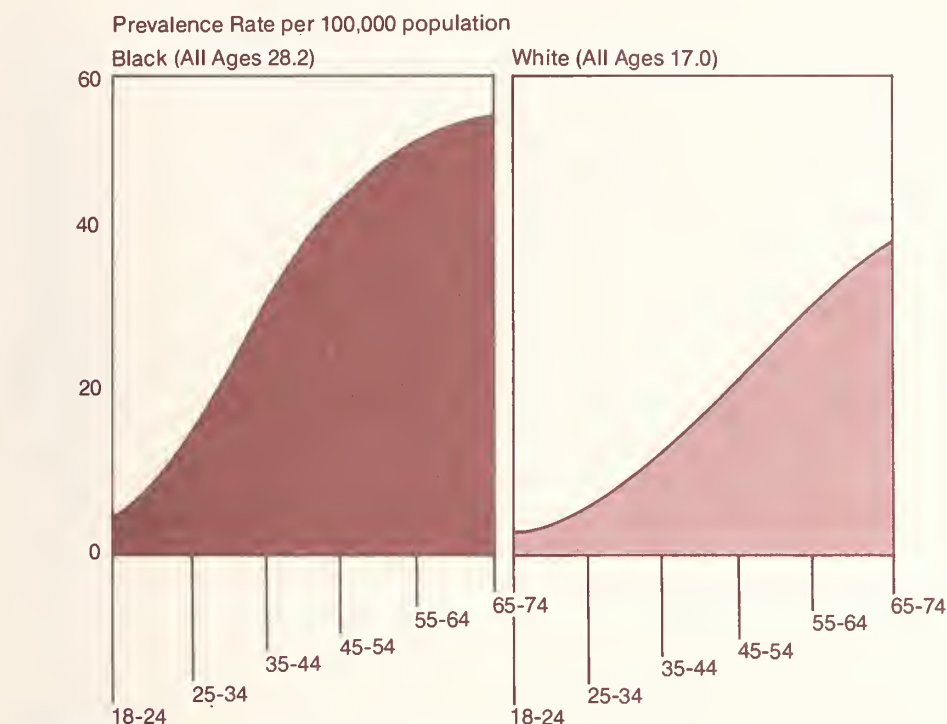
Hypertension. In the 1960-62 Health Examination Survey, an estimated 17 million adults in the United States were found to have definite hypertension, and an additional 10.5 million adults were found to have definite hypertensive heart disease (HHD). This accounted for 15.3 percent and 9.5 percent of U.S. adults having hypertension and hypertensive heart disease, respectively (10, p.1). Definite hypertension was defined as a systolic reading over 160, or a diastolic reading over 95. Borderline hypertension was defined as a systolic reading between 140 and 160 and a diastolic between 90 and 95. A normal blood pressure reading was defined as a systolic below 140 and a diastolic below 90. Definite hypertensive heart disease was defined as the presence of definite hypertension or history of hypertension plus specified abnormal ECG's and/or cardiac X-rays (10, p.4.).

The prevalence rate of definite hyper-

Hypertension

Prevalence Rates of Definite Hypertension Among White and Black Persons 18-74 Years of Age, U. S., 1971-1974

Figure 2.



¹ Systolic blood pressure of at least 160 mm. Hg. or diastolic blood pressure of at least 95 mm. Hg.

Source: U.S.P.H.S., National Center for Health Statistics, Advance Data from Vital and Health Statistics, No. 1.

tension, at almost every age group, was roughly twice as great for the Black population as for the white population (See Figure 1). The prevalence rates of definite and borderline hypertension in White and Black populations by age are presented in Table 8.

In Table 9 are presented estimates of the prevalence of hypertension from the Health Interview Survey, which are derived from reports of respondents as opposed to Health Examination Survey estimates which are based on physical examination. In 1972, an estimated 12 million adults in the U.S. had hypertension, according to the Health Interview Survey (HIS), compared with 17.0 million in 1960-62, according to the Health Examination Survey. Most of the difference is probably due to under-reporting in HIS, as a consequence of undiagnosed hypertension. The prevalence of hypertension among races other than white, according to HIS

estimates, is 25 percent greater than that of whites, 72.9 condition per 1000 persons among nonwhites, compared to 58.3 among whites (See Table 9). A prevalence rate of 121.8 among persons in the lowest income group is almost three times the prevalence (43.8) among persons in the highest income group.

In Table 10 and Figure 2, prevalence rates of definite hypertension among white and black persons 18 to 74 years, by age and sex, are presented for the years 1971 through 1974. According to these more recent data, an estimated total of 23.1 million persons had definite hypertension for these years. (See Table 10).

According to Health Examination Survey findings, there was no clear pattern of prevalence of hypertension association with family income. Lower prevalence rates among persons with a higher education, however, were observed particularly among white

women. Black persons with family incomes of less than \$2,000, or with less than 5 years of schooling, had higher than the expected prevalence rate, while Black males who were working had lower than the expected prevalence rates. "White farmers and farm managers had lower than expected prevalence, while White laborers had higher than expected prevalence. Black clerical and sales workers and farmers and farm managers had lower than expected prevalence. Professional persons, generally, had a lower than expected prevalence regardless of race or sex." (10, p.11)

"Three factors appear to be most important in the production of hypertension; these are:

1. A strong familial tendency;
2. Obesity; and
3. Personality.

When hypertension occurs in an adult, it may, almost, be taken for granted that the children will be similarly affected. In instances of obesity, weight reduction alone may effect a lowering of blood pressure, while the sharp, albeit temporary, increases in blood pressure that occur, as a result of psychic stresses, such as anxiety or fear, are well recognized. From this well-known fact, it has been postulated that hypertension may be due, in part, to repeated psychic traumata occurring over long periods. However, much more research is necessary before this hypothesis can be accepted." (9, p.61)

The racial differential in blood pressure is well documented, but this does not appear to be wholly biological or genetic. Findings from the HES related to the racial differential and the interpretation are quoted below.

"... the prevalence of definite hypertension in the two races was much closer in the Northeast than in the South or West. It was closer in giant metropolitan areas than rural areas, and closer at incomes over \$2,000 than at incomes less than \$2,000. These are not, of course, entirely independent variables, and the sample-size of the HES is too small to separate

them statistically; however, there are clear indicators in the data that hypertension in Blacks, and especially for Black men, is related to environment.” (10, pp 9-10)

D. Malignant Neoplasms

In 1975, cancer was the second leading cause of death in the United States, and it accounted for almost 366,000; 20 percent of all deaths (6). In 1900, 41,000 deaths, only 3.7 percent of all deaths in the United States, were attributed to cancer (8). While part of the increase in cancer incidence and mortality is the result of changes in the age distribution and improvements in diagnosis and reporting, a large part of the increase is considered real. (9, p.62)

In 1968, the hospitalization rate per 10,000 population for malignant neoplasms was 98.7 (11, p.26), compared to 112.5 in 1975 (5, p.46), a 14 percent increase. The cancer hospitalization rate of whites was higher than that of other races, 86.5 per 10,000 whites, compared with 72.0 per 10,000 for all other races in 1968.) By 1975, the rate for whites had increased 18 percent, to 102.1, while the rate for all other persons increased 26.5 percent, to 91.1. (See Tables 2 and 11)

While the hospitalization rate of nonwhites for cancer is lower than that of whites for that disease group, the mortality rate is higher for nonwhites. The age-adjusted cancer death rate of whites was 128.1 per 100,000 in 1975, compared to 155.0 for all others (See Table 12). The mortality racial differential was 1.21 in 1975, 1.16 in 1970, and 1.03 in 1950. While the racial differential varies from year to year, it appears to be widening.

The National Cancer Institute found that in 1947 black males had a cancer incidence, all sites, that was lower than that of white males, but that this situation reversed itself in 1969 (See Table 13). Perhaps, some of the increase of reported cancer in blacks was due to under-reporting in the earlier period, “but . . . the rates are now substantially higher in black males is indisputable” (12, p.4). The reversal from lower to

higher rates for black males was due largely to increases in the incidence of cancers of the lung, colon/rectum, prostate, and esophagus.

Cancer is diagnosed earlier in whites than blacks. “Thus, in males the percentage of cancers diagnosed in a localized stage was 38 percent in whites and 29 percent in blacks. Similarly, in females, it was 42 percent for whites compared with 32 percent for blacks” (12, p.4). In addition, white survival rates tended to be higher within comparable stages (See Table 14). Fifty-nine percent of white males, compared with 49 percent of black males with localized cancer, have 5 year survival rates. Seventy-four percent of white females, compared with 69 percent of black females, have 5 year survival rates.

Cancer sites with the highest incidence among nonwhite males in 1969 were: 1) prostate, 78.8 per 100,000 population; 2) lung, 74.4 per 100,000 population; and, 3) colon/rectum cancers, 38.6 per 100,000 population. These sites were, also, among the top 3 for whites. The three cancer sites having the highest death rates among males in 1973, four years later, were: 1) lung, 65.7 per 100,000 population; 2) Prostate, 28.3 per 100,000 population; and 3) colon/rectum; 8.5 per 100,000 population (See Table 13).

The racial differential for both incidence and mortality from lung cancer was, previously, more favorable to whites. In 1969, the racial differential black to white ratio for incidence of lung cancer was 1.10, and in 1973 it had increased to 1.21. “Cigarette smoking is considered responsible for the large majority of lung cancers. It is, also, well known that the incidence of lung cancer is enhanced by the synergisms of cigarette smoking, such as those with occupational exposure to asbestos dust and radioactive substances” (12, p.8). Especially high lung cancer rates have been documented in cigarette smokers, who were formerly residents of rural farm areas. This phenomenon, although documented among whites only, had provocative implications for blacks, large numbers

of whom have left rural areas for larger cities (12, p.8).

Colon and rectum cancer incidence and mortality rates have increased very little among whites, but appreciably among nonwhites. Between 1947 and 1969, blacks experienced a 50 percent increase in incidence from this cancer: from 25.5 to 38.6 per 100,000 population, while the nonwhite mortality rate for this cause of death increased 19 percent: from 15.6 per 100,000 population to 18.5 (See Tables 13 and 15).

Diet is considered to play a major role in colon/rectal cancers. Simple sugars and a low bulk refined diet, along with higher animal protein and a high fat and cholesterol content diet, are believed to contribute to the high rates of this cancer experienced in this country. This contributing factor can be deduced from our cancer rates when they are compared with those substances (12).

Cancer of the prostate has a high incidence and mortality rate among black males. The mortality differential is large, and it has increased from 1.25 in 1950 to 1.84 in 1973.

Among both black and white females, breast cancer is the most common cancer site resulting in death. Mortality from this cause of death is higher among persons at higher socio-economic levels. The breast cancer death rate among black females was lower than that for white females in both 1950 and 1973, but the margin is narrowing. In this case, it is becoming less favorable to the disadvantaged whose mortality from this cancer is catching up to whites. From 1950 to 1973, the rate increased 3.7 percent in white females, from 24.5 to 25.4, but 18.2 percent in black females, from 20.3 to 24.0 (See Table 15).

Cervical cancer, also, varies markedly with socio-economic status; it is much higher in lower socio-economic groups. Substantial reductions have occurred in the incidence of cervical cancer among both whites and blacks. A larger decrease has been experienced by white females, 60 percent between 1947 and 1969 compared

with blacks, 54 percent reduction in those same years. The racial differential, therefore, which was large to begin with, is increasing. In 1947, the racial differential in the incidence of cervical cancer was 1.94, a rate of 74.6 in blacks compared with a rate of 38.4 in whites. In 1969, the differential *increased* to 2.24, with blacks experiencing an incidence rate of 34.2 compared with a rate of 15.3 among whites (See Table 13). Despite the considerable racial differential, the substantial reduction in the incidence of invasive cancer of the cervix is one of the big success stories in cancer control. "Perhaps some of this reduction is due to a general advance in living standards. However, most of it must be attributed to effective medical intervention at an earlier stage of disease among women at high risk for invasive cervical cancer." (12, p.11)

To summarize the racial differential in cancer mortality among females, while the cancer mortality rate among females is declining, the decline is greater for white females than for black females, which has resulted in a larger racial differential. The racial cancer mortality differential among females, 1.11, was lower than that among males, 1.27, in 1975.

E. Diabetes

Diabetes is currently the sixth leading cause of death in the United States (6). It is, also, implicated as a contributory cause in a substantial proportion of deaths attributed to other diseases, particularly those of the cardiovascular and renal systems (13, p. 5). It has been estimated that there are 3 million diabetics in the United States, with two-thirds of them unaware that they have the disease (9, p. 70).

In 1973, 4,191,000 persons reported having diabetes in health interviews compared with 2,385,000 in 1964-1965 (15, p. 26). Part of this increase may be due to a slight increase, during this period, in population, and particularly in the aged population. Perhaps, slight changes occurred in either the question or interviewing technique. Most of this 76 percent increase, however, represents a real in-

crease in the prevalence of this condition in the United States.

According to the National Health Interview Survey for 1964-65, the total prevalence rates for the white versus the nonwhite populations did not differ markedly: 12.1 per 1000 population for whites, and 13.3 for nonwhites (16, p. 50). This yields a differential of 1.10. These prevalence rates increased 64 percent for whites to a new high of 19.9 per 1000 persons in 1973. The rate increased 79.7 percent among nonwhites to a rate of 23.9 per 1000 population in 1973 (See Table 16), and the racial differential became 1.20 in 1973. Nonwhites not only have a higher prevalence of diabetes, but the differential has increased over time since 1965.

Regarding differential utilization of health services for this disease, of all visits to physicians offices in 1973, a disproportionate percentage, 17.1 percent (17, p. 27) were made by nonwhites, whose proportion in the population in 1973 was only 12.6 percent. Converting the number of persons seen in physician's offices for diabetes to rates, the visit rate for diabetes for whites was 41.0 per 1000 population compared with 58.6 for nonwhites, a differential of 1.43. This may represent an even greater problem, since nonwhites have disproportionately low ratio of use of physician's offices, in general. Utilization of hospitals for this condition is, also, greater among nonwhites. The hospitalization rate for nonwhites in 1975 was 3.0 per 1000 population compared with 2.1 for whites, a racial differential of 1.43. This happens to be exactly the differential for physician office visits. This ratio must be compared to the racial differential for all conditions for which persons are hospitalized, which is only 1.02.

The mortality racial differential for diabetes, 2.20, is much greater than the prevalence differential of 1.20, or the hospitalization differential of 1.43. Mortality ratios by race from 1950 to 1975 are presented in Table 17. The fact that the mortality differential is so much greater than the prevalence

differential may have to do with reporting differentials, the severity of the condition among nonwhites, or the differences in utilization or quality of health care. In table 4, mortality rates from the five leading chronic conditions are presented for selected years by race. While the death rate from diabetes *decreased* 25 percent among whites between 1950 and 1975, it *increased* 26 percent among nonwhites during this period. In 1950, the racial differential was 1.24, but is increased to 2.09 by 1975. A great deal of yearly variation in nonwhite death rates are evident, but it does appear that a decline is beginning to occur in the death rate for nonwhites. The 1975 rate of 21.7 among nonwhites is the lowest the rate has been in the last ten years.

Nonwhite females have the highest rate of any population subgroup, 24.6 per 100,000 population. This rate is over twice that among White females: 10.2 per 100,000 population. The American Indian and Alaskan Natives also have a death rate in excess of that of the total population. In 1971, the rate per 100,000 population among these two groups was 31.7 (See Table 18), compared to 13.8 for the total population. This results in a differential ratio of 2.30.

"The Pima Indians of Arizona have been found to have the highest overall rate of diabetes ever recorded in a circumscribed, apparently normal, population group. National Institute of Arthritis and Metabolic Diseases (NIAMD) scientists have estimated

that the rate is 10-15 times that of the U.S. population, as a whole. The role of diet and other environmental factors, in precipitating the disease in this population, is currently being studied, intensely, by the NIAMD" (16, p. 50).

In figures 3 and 4, the prevalence of diabetes by race and income are presented. While the prevalence rate of nonwhites, 23.9, is 20 percent higher than that of whites, 19.9, the prevalence rate of persons whose income is less than \$3000, 45.0 is 249 percent higher, or almost three and a half

times the rate of persons earning \$15,000 or more (12.9).

"It is known that the rates of occurrence of diabetes vary widely in different populations and ethnic groups. It is clear that *genetic factors*, as well as *environmental factors*: nutrition, quality and availability of medical care, et cetera, exert important influences which lead to these different rates. However, the *degree* to which each of these factors contributes to the appearance of diabetes in different population groups is at present poorly understood" (16, p. 50-51).

"An enormous amount of data is needed to describe fully the clinical manifestations of diabetes, the lost man-hours resulting from the disease, and the causes for the different rates of occurrence found among various racial groups. More striking than the actual prevalence of diabetes in non-whites is the long-term complications of the disease, resulting in greater physical disability and economic hardship on already disadvantaged groups of Americans." (16, p. 50)

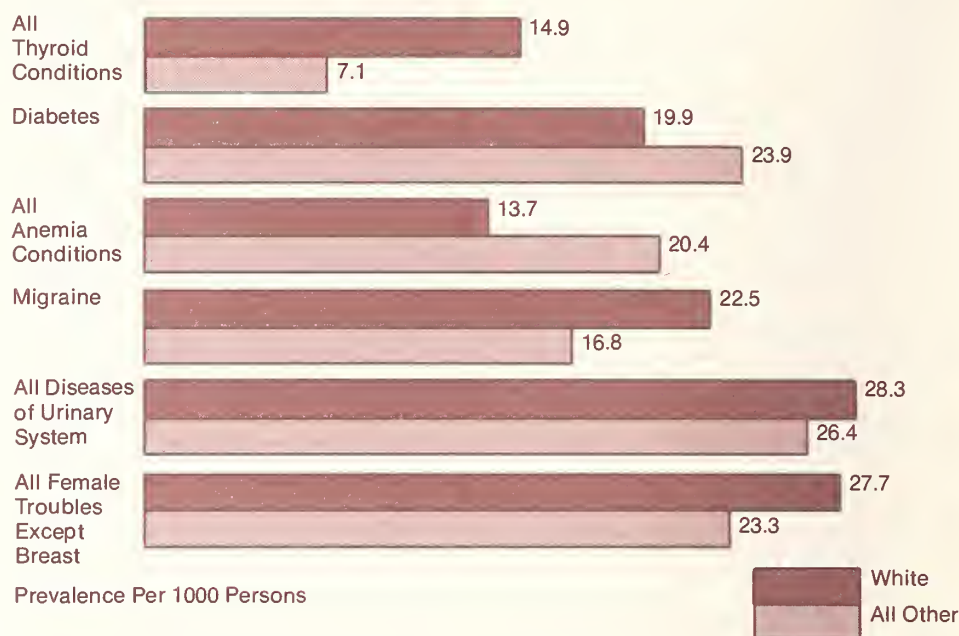
Although there is no known cure for diabetes, "... since the introduction of insulin in 1922, the duration of life after diagnosis of diabetes has increased threefold" (14, p. 1). It is not only the diabetes in and of itself, but the number of conditions that seem to accompany the disease. The majority of diabetics have at least one other chronic condition, and their disability rate was roughly three times that for the total population (14, p. 1).

The age at onset of diabetes is an important determining factor of both disease severity and required treatment. Generally, the later in life diabetes develops, the less severe the condition, and the less likelihood of taking insulin. In the 1964-65 survey, about half of the diabetics were diagnosed between the ages of 45 and 64 (See Table 19). While the relatively small number of nonwhites in the sample precluded definitive conclusions, it appears that diabetes among non-whites of both sexes was more often diagnosed in middle life.

Chronic Conditions

Prevalence of Selected Chronic Conditions Reported in Health Interviews Per 1,000 Persons, by Race, 1973.

Figure 3.



Source: USDHEW, Prevalence of Chronic Conditions of the Genitourinary, Nervous, Endocrine, Metabolic and Blood and Blood-Forming Systems and Other Selected Conditions, U. S. 1973, Public Health Service, Rockville, Maryland, March, 1977.

Alternatively, the "... less frequent early-diagnosis ... may well reflect not differential incidence but delayed medical attention, which would result in more severe diabetes, a larger number of associated conditions, and a higher mortality rate. Evidence of delayed diagnosis is shown by the substantially higher proportion of nonwhite persons in all age groups through 54 who reported diagnosis in the past 10 years." (14, p. 5)

F. Chronic Respiratory Conditions

An estimated 46.9 million people reported an estimated 53.7 million chronic respiratory conditions in the United States in 1970 (18, p. 3). The most prevalent conditions reported in millions were: chronic sinusitis, 20.6; hay fever without asthma, 10.8; chronic bronchitis, 6.5; asthma with or without hay fever, 6.0; and hypertrophy of tonsils and adenoids, 4.4. Non-whites had lower prevalence rates for almost all of the 15 leading chronic, nontubercular, respiratory conditions. The largest racial differential was in

the prevalence of chronic sinusitis. Persons of races other than white had only half the prevalence of whites. The relationship of the prevalence of this condition with income is inconsistent (See Table 20).

The prevalence of hayfever among races other than white is 30 percent lower than among whites. Hay fever is, also, directly related to income: the higher the income, the higher the prevalence of hayfever. Low income persons have a prevalence rate 38 percent lower than that of higher income persons: 46.3 per 100,000 compared with 74.5 per 100,000 (See Table 20).

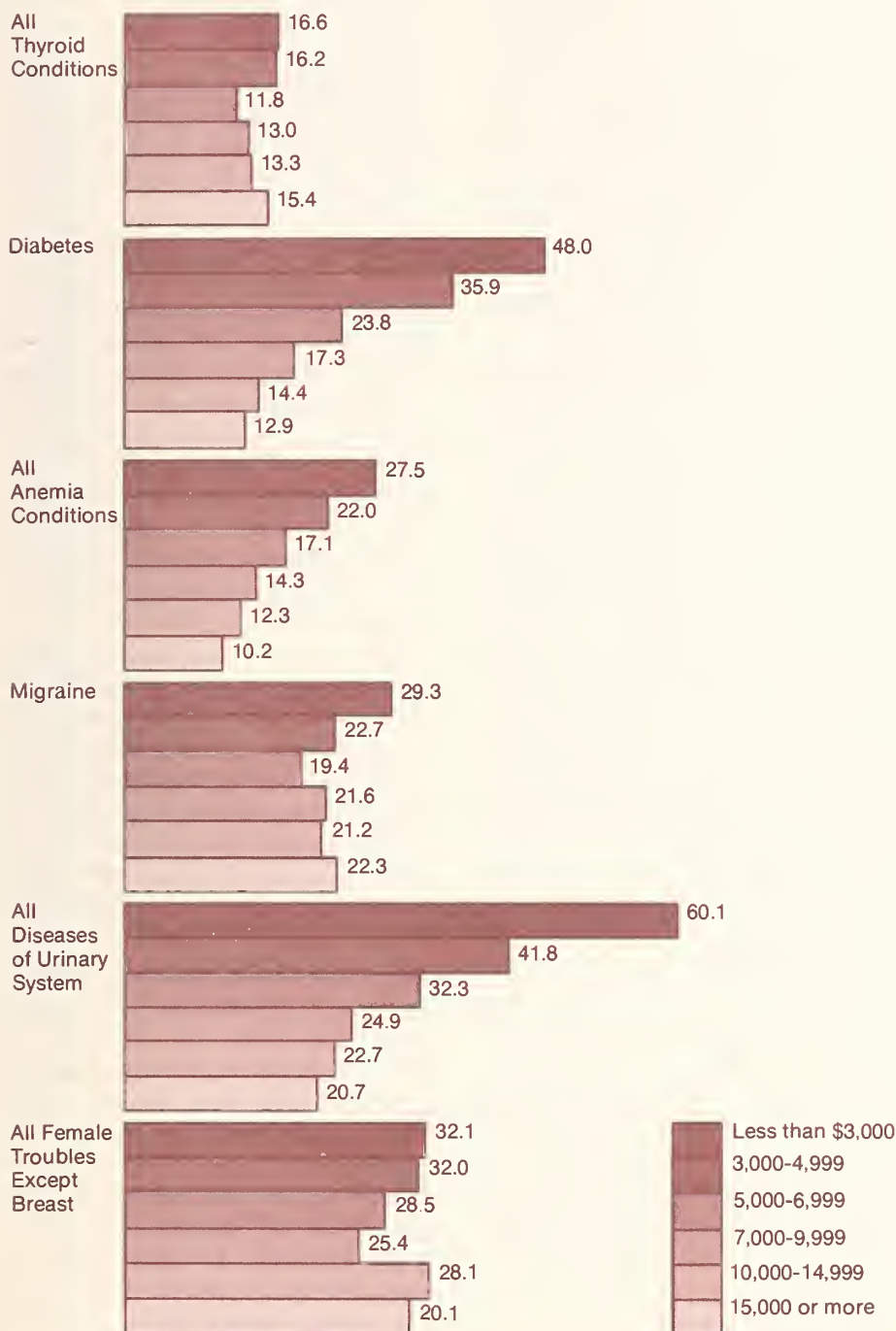
While chronic bronchitis prevalence was lower among nonwhites, the prevalence was higher among low income persons (See Table 21). The income differential was 1.28, when persons with family incomes of less than \$3000 are compared with persons with family incomes of \$15,500 or more.

Both the racial and income differential in the prevalence of asthma is unfavorable to the disadvantaged. The

Chronic Conditions

Prevalence of Selected Chronic Conditions Reported in Health Interviews Per 1000 Persons, by Family Income, 1973.

Figure 4.



Prevalence Per 1000 Persons

Source: USDHEW, Prevalence of Chronic Conditions of the Genitourinary, Nervous, Endocrine, Metabolic and Blood and Blood-Forming Systems and Other Selected Chronic Conditions, U. S. 1973, Public Health Service, Rockville, Maryland, March 1977.

racial differential is 1.18. All other races have a prevalence rate of 34.9 per 1000 population, compared with a prevalence rate of 29.5 among whites. The income differential is 1.59. Persons with family incomes of less than \$3000 have a prevalence rate of 43.7 compared with 27.4 for those with family incomes of \$15,000 (See Table 22). Hypertrophy of tonsils and adenoids is slightly less prevalent among nonwhites, and it appears to be only slightly more prevalent among low income groups (See Table 22).

While the prevalence of tuberculosis has declined for all persons in the U.S. and other western countries, since the turn of the century, it has not disappeared. Also, while both the prevalence and mortality from this disease is low, relative to other diseases, the condition has a heavy impact on the disadvantaged. Tuberculosis incidence, new cases in 1970, was 18.3 per 100,000 population compared with 30.8 in 1960 (16). Below are incidence rates by race in the U.S. and in New York.

UNITED STATES

Total			
Year	Population	White	Nonwhite
1960	30.8	24.4	80.6
1970	18.3	12.4	59.0

NEW YORK

Total			
Year	Population	White	Nonwhite
1950	97.6	71.3	288.8
1960	60.4	37.4	161.6
1970	32.8	15.7	80.8

Puerto Rican

244.0
103.3
37.3
(16, p. 44)

While U.S. tuberculosis incidence rates have declined during the last two decades among both whites and nonwhites, whites have experienced greater declines. The nonwhite/white racial differential ratio in 1960 was 3.30, and by 1970 it had climbed to 4.76. In New York, nonwhites have 5.15 times the incidence of whites, and

Puerto Ricans have 2.38 times the incidence of whites.

Tuberculosis morbidity is, also, excessive among American Indians and Alaskan Natives (Table 23). In 1974, nonwhites had 4.6 times the morbidity of Whites, while Indian and Alaskan Natives had 8.2 times the morbidity of whites. Since 1962, the morbidity differential had decreased for American Indians and Alaskan Natives compared with Whites from 11.8 to 8.2, but it increased for nonwhites from 3.7 in 1962 to 4.6 in 1974.

The mortality differential for American Indian and Alaskan Natives decreased from 6.1 in 1955 to 5.1 in 1975 (See Table 24). The differential is high for nonwhites compared with Whites, also. In the 1970's, the differential varied between 4.25 and 5.11. While the differential varies yearly, it does not appear to be narrowing. The decrease in mortality from 1970 to 1975 was 41 percent for nonwhites compared with 44 percent for Whites (See Table 25).

Tuberculosis death rates by race for 1969-71 in the United States are presented in Table 26 (19). These rates were derived from a study of differentials in selected vital and health statistics measures, associated with residents in poverty and nonpoverty areas, in 19 of the largest cities. Races other than white experienced higher death rates for tuberculosis in the total city area, as well as in poverty and nonpoverty areas.

According to this analytical study, "The malnutrition, overcrowding, and poor sanitation, so often prevalent in urban poverty areas, are conducive to the contraction and spread of infectious disease, particularly tuberculosis" (19, p. 18). Poorly nourished persons could be expected to be less resistant to disease organisms, and, consequently, their infections would tend to be more serious and to have a higher probability of a fatal outcome compared with better nourished persons.

For the 19 large cities included in this study, death rates for tuberculosis for the white population living

in poverty areas were three times as high as those for white persons in the remaining areas of the city, 8.7, compared with 2.8 deaths per 100,000 population. Death rates of persons of all other races living in poverty areas were slightly more than twice as high as for their counterparts in higher income areas, 10.0 as compared with 4.3 deaths per 100,000. The racial differences in rates for these cities should be interpreted with caution, since the median age of the population for all other races is lower than that of the white population. The overall death rate for tuberculosis is slightly depressed in populations with more younger persons, since the incidence of this disease is fairly low for young age groups, but rises rapidly after 35-40 years of age.

While the mortality experience of the disadvantaged is poor compared with whites, with regard to tuberculosis, the disadvantaged have lower mortality rates for bronchitis, emphysema, and asthma (See Table 27). The racial differential was .72 in 1975 compared with 1.17 in 1950. "Evidence has accumulated to implicate atmospheric pollution, cigarette smoking, and constitutional factors in the etiology of the chronic nonspecific respiratory diseases" (7, p. 495). Separating out the effects of these factors from each other and from other factors is a difficult task. Areas with high levels of pollution are often areas with high concentrations of persons of lower socioeconomic status who, also, have poor housing, overcrowding, and other conditions detrimental to health. With regard to smoking behavior, the disadvantaged do not demonstrate a higher smoking level than the rest of the population.

G. Other Selected Chronic Conditions

According to responses to the National Health Interview Surveys, conducted in 1969 through 1973, the most frequent chronic conditions among persons ages 17-64 were hearing impairments, arthritis, and hypertension (See Table 28 and 29). Hypertension was discussed in a previous section and

will not be repeated here. In addition to these chronic conditions, impairments of the back or spine are very frequent among persons in the younger age group, ages 17-44. Impairments of the spine are more frequent than any other chronic condition in the age group 17-44, with a prevalence rate of 49.0 per 1000 persons. Whites have a higher prevalence: 51.3 conditions per 1000 persons compared with 33.0 for all others.

All chronic conditions included in Table 28, among persons 17-44 years of age are more prevalent among lower income persons than higher income persons. The highest income differential was for hypertension, 1.61. Findings from the Health Examination Survey, described earlier in this chapter, showed no association between hypertension and income level. The next highest income differential was hearing impairments, 1.55, and diabetes, 1.43.

The prevalence rate of hearing impairments among persons 17-44 years of age was 44.2 per 1000 persons in 1971. Hearing impairments are the second most prevalent chronic condition among all persons and among white persons aged 17-44; They rank fourth among persons of other races aged 17-44, with a rate of 29.7 per 1000 persons.

The second most prevalent chronic condition in 1969, among all other races aged 17-44, was arthritis. The rate among all other races was 41.4 compared with 40.2 among whites. This chronic condition ranks third among whites aged 17-44. Arthritis ranked first in 1969 among all races aged 45-64, with the rate among races, other than white, 221.8 per 1000 persons, almost 10 percent higher than that among whites, 202.4 per 1000 persons.

The third most prevalent chronic condition, after arthritis and hypertension, among all persons aged 45-64 years, were hearing impairments. This debility had a prevalence rate of 116.8 per 1000 persons for whites and only 88.7 per 1000 persons for all other races. For all other races, the third

most prevalent chronic conditions was vision impairments. Nonwhites had a prevalence rate of 99.6 per 1000 population, which is 67 percent higher than that of whites, who had 59.1 per 1000 persons.

Nonwhites aged 46-64 had lower prevalence rates for the following conditions: chronic bronchitis, hernia of the abdominal cavity, ulcers of the stomach, or duodenum, a very small difference, and hearing impairments. Among persons age 45-64 all chronic conditions were more prevalent among low income than among high income persons. Conditions with the highest low income to high income differential rates were diabetes, 2.43; asthma, 2.36; vision impairments, 2.33; heart conditions, 2.09; impairments of the back or spine, 1.97; and arthritis, 1.86.

H. Limitation of Activity Due to Chronic Disease Conditions

"Limitation of activity is defined as the inability to carry on the major activity for one's age-sex group, such as: working, keeping house, or going to school, restriction in the amount or kind of major activity, or restriction in relation to other activities, such as recreational, church, or civic interests" (20, p. 1). While a larger proportion of whites than blacks reported a limitation of activity due to chronic

conditions, a larger proportion of blacks, 4.4 percent, compared with whites, 3.3 percent, reported a limitation which rendered them unable to carry on their major activity (See Table 30). As might be expected, the limitations of concern here keep the disabled from earning large incomes. Thus, a strong relationship exists between the proportion of respondents reporting limitations of activity, which results in an inability to carry on major activity and the income level of the respondent. Nine percent of the respondents earning \$3000 and under a year reported a major activity limitation, compared with less than 1 percent of those earning \$25,000 and over.

The total proportion of persons reporting a limitation in activity, due to chronic conditions, has been increasing over time. In the 1969-70 Health Interview Survey, only 11.7 percent reported some limitation compared with 14.3 percent in 1975. In 1969-70, 2.9 percent were unable to carry on a major activity, as a result of the limitation compared with 3.4 in 1975. The proportion of whites reporting any limitation increased from 11.5 in 1969-70 to 14.3 in 1975, while the proportion of all other races reporting any limitation increased from 13.9 percent in 1969-70 to 14.2 percent in 1975. A larger increase in the propor-

tion of whites with some limitation occurred in this period compared with the increase among blacks. While the rate for whites was 11.5 percent, compared to 13.9 percent for all other races in 1969-70, it was only 14.3 compared with 14.2 percent in 1975. This comparison contains a small artifact due to the grouping of a number of disparate groups. When nonwhites are broken down into groups composed of blacks only and blacks with all other nonwhites, a larger differential between whites and blacks was observed in 1975, 14.3% for whites and 15.0 for blacks only.

Income differentials in activity limitation, as the preceeding discussion indicates, are greater than racial differentials. When income levels are compared for whites and all others separately, for example, persons, both white and all others, with annual family incomes of under \$3000 have roughly three times the proportion of persons with activity limitation compared with persons with family incomes of \$10,000.

The percent of the black population age 45-64 with a *partial* work disability was 10.6 percent in 1970 compared with 9.3 percent of whites. The proportion of blacks with a *complete* work disability was 14.6 percent compared with 7.9 percent of whites (1, p. 477).

Table 1

Prevalence of heart conditions reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1972

Selected characteristic	All ages	Under 17 years	17-44 years	45-64 years	65 years and over	All ages	Under 17 years	17-44 years	45-64 years	65 years and over
	Prevalence of conditions in thousands					Number per 1,000 persons				
Total ¹	10,291	683	1,900	3,749	3,959	50.4	10.5	24.6	88.8	198.7
Sex										
Male	4,725	393	724	1,953	1,654	48.0	11.9	19.5	97.4	199.3
Female	5,566	290	1,176	1,796	2,305	52.7	9.1	29.3	81.0	198.3
Color										
White	9,237	593	1,639	3,370	3,635	51.7	10.8	24.2	88.4	200.0
All other	1,055	90	262	378	324	41.5	9.0	27.5	91.6	185.2
Family income										
Less than \$3,000	2,244	39	183	588	1,435	114.1	9.1	32.6	162.7	233.6
\$3,000-\$4,999	1,651	58	209	461	923	78.0	9.4	32.4	117.8	199.6
\$5,000-\$6,999	1,335	119	230	478	509	54.5	15.1	25.2	98.7	190.7
\$7,000-\$9,999	1,381	103	310	608	361	39.9	8.8	22.0	88.2	188.9
\$10,000-\$14,999	1,676	210	478	743	245	32.8	11.5	22.5	74.3	158.9
\$15,000 or more	1,442	109	406	665	262	35.2	8.5	24.3	66.6	174.8
Education of head of family										
Less than 9 years	3,803	116	299	1,279	2,108	82.3	9.6	25.4	102.5	213.1
9-11 years	1,732	113	337	730	552	49.4	9.4	27.2	95.9	179.5
12 years	2,468	243	614	975	637	37.5	10.7	22.4	79.7	183.0
13 years or more	2,123	197	623	735	568	38.9	11.3	25.2	78.4	186.7
Usual activity										
Preschool (under 6 years)	218	218	...	...	...	10.5	10.5	...	...	...
School-age (6-16 years)	465	465	...	...	...	10.5	10.5	...	...	...
Usually working (17 years and over)	3,129	...	954	1,824	351	41.7	...	21.1	67.7	125.7
Usually keeping house (female, 17 years and over)	3,684	...	647	1,154	1,883	92.6	...	35.8	94.7	197.3
Retired (45 years and over)	1,929	...	...	508	1,420	233.6	...	...	294.7	217.4
Other (17 years and over)	866	...	300	262	305	53.3	...	21.7	192.2	289.4
Place of residence										
All SMSA	6,503	485	1,300	2,372	2,347	49.6	11.9	25.7	86.1	192.3
Central city	3,159	204	589	1,156	1,211	55.0	12.1	26.9	94.6	187.2
Not central city	3,344	281	711	1,216	1,136	45.4	11.7	24.9	79.3	198.0
Outside SMSA										
Nonfarm	3,370	174	556	1,199	1,440	51.9	8.1	23.1	94.9	211.4
Farm	418	*	44	177	172	51.6	*	17.3	86.3	190.5
Geographic region										
Northeast	2,506	178	429	899	1,000	52.2	12.4	24.4	82.3	192.9
North Central	2,629	171	477	948	1,033	47.0	9.4	22.7	84.8	187.6
South	3,297	176	589	1,228	1,305	51.4	8.5	24.0	96.0	212.6
West	1,859	158	405	674	621	51.6	13.6	29.0	91.7	200.6

[Data are based on household interviews of the civilian, noninstitutionalized population.]

¹Includes unknown income and education.

NOTE: Relative standard errors of estimates for this table are found on chart on page 42, code A4AN, and page 43, code P4AN-M. A guide to the use of the relative standard error charts is on page 41.

Source: National Center for Health Statistics: Prevalence of Chronic Circulatory Conditions, United States, 1972. DHEW Publication No. (HRA) 75-1521. U.S. Government Printing Office, Washington, D.C., September 1974.

Table 2

Number and percent of discharges and average length of stay for patients discharged from short-stay hospitals, by selected first-listed diagnostic categories and color: United States, 1975

Diagnostic category and ICDA code		Number of discharges in thousands		Percent of total discharges		Average length of stay in days	
		White	All other	White	All other	White	All other
All conditions ¹		25,715	3,798	100.0	100.0	7.7	8.1
Malignant neoplasms	140-209	1,217	137	4.7	3.6	13.0	16.0
Benign neoplasms and neoplasms of unspecified nature	210-239	583	100	2.3	2.6	6.0	7.2
Diabetes mellitus	250	385	79	1.5	2.1	10.0	11.5
Hypertensive disease	400-404	209	60	0.8	1.6	7.4	10.1
Ischemic heart disease	410-414	1,507	127	5.9	3.3	10.8	11.7
Acute myocardial infarction	410	321	21	1.2	0.6	14.3	13.2
Chronic ischemic heart disease	412	979	90	3.8	2.4	10.3	11.8
Other ischemic heart disease	411, 413, 414	207	16	0.8	0.4	8.2	9.5
Cerebrovascular disease	430-438	475	58	1.8	1.5	12.9	15.7
Pneumonia, all forms	480-486	554	83	2.2	2.2	9.2	10.1
Hypertrophy of tonsils and adenoids	500	532	56	2.1	1.5	2.2	2.3
Ulcer of stomach, ulcer of duodenum, peptic ulcer of unspecified site, and gastrojejunal ulcer	531-534	320	43	1.2	1.1	9.4	9.5
Inguinal hernia	550, 552	402	36	1.6	0.9	5.6	5.9
Cholelithiasis	574	376	25	1.5	0.7	10.2	11.8
Diseases of the urinary system	580-599	901	119	3.5	3.1	6.6	8.8
Disorders of menstruation	626	448	55	1.6	1.4	3.7	5.4
Complications of pregnancy, childbirth and the puerperium	630-678	2,756	736	10.7	19.4	3.6	3.8
Displacement of intervertebral disc	725	281	21	1.1	0.6	11.1	11.0
Fractures, all sites	800-829	891	94	3.5	2.5	11.4	11.9

[Excludes newborn infants and Federal hospitals]

¹Includes data for diagnostic conditions not shown in table.

NOTE: Data in tables are underreported because color was not recorded on the hospital records of an estimated 4.5 million inpatients.

Source: National Center for Health Statistics: Utilization of Short-Stay Hospitals: Annual Summary for the United States, 1975. DHEW Publication No. (HRA) 77-1782. Series 13, No. 31. U.S. Government Printing Office, Washington, D.C., April 1977.

Table 3

Age-adjusted death rates for Diseases of heart, by color and sex: United States, 1950-69

Year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Rate per 100,000 population									
1975	220.5	308.3	149.7	217.2	308.0	144.2	245.2	307.0	194.6
1974	232.7	323.6	159.2	228.8	322.8	152.9	262.8	325.8	210.8
1973	244.4	339.3	167.4	238.9	338.1	160.3	279.8	344.7	225.8
1972	249.3	344.5	171.6	244.9	343.3	164.7	283.1	349.3	228.5
1971	252.0	344.6	175.1	247.4	343.0	168.2	297.3	363.3	242.3
1970	253.6	348.5	175.2	249.1	347.6	167.8	288.9	350.8	236.6
1969	262.3	356.8	182.6	257.1	354.8	174.9	312.8	378.1	256.8
1968	270.0	365.6	189.1	264.1	362.9	180.5	326.5	391.4	271.4
1967	267.7	362.6	186.8	263.1	361.6	179.2	310.1	370.7	257.8
1966	275.8	371.6	193.4	270.5	369.8	185.2	324.3	385.5	270.5
1965	275.6	369.7	194.1	270.6	368.6	185.9	319.4	376.1	269.2
1964	276.9	369.0	196.6	271.7	367.7	187.9	323.0	375.2	276.4
1963	285.4	379.2	203.1	277.9	375.7	192.3	333.8	387.0	286.9
1962 ¹	282.7	373.4	202.3	275.5	370.3	191.6	326.8	376.4	283.0
1961 ¹	278.6	367.5	199.2	273.8	367.3	190.5	318.4	362.7	278.0
1960	286.2	375.5	205.7	281.5	375.4	197.1	324.2	368.3	283.3
1959	283.3	369.9	204.8	278.7	369.4	196.6	326.7	365.9	279.2
1958	289.3	374.7	211.6	284.0	373.7	202.4	335.4	377.1	297.5
1957	293.0	377.4	215.5	286.9	375.6	205.8	345.6	387.2	307.6
1956	288.7	371.2	212.6	283.4	370.2	203.5	334.6	372.7	298.7
1955	287.5	368.4	212.5	282.6	367.4	204.0	330.3	369.2	293.0
1954	284.7	363.4	211.3	279.6	362.2	202.6	328.5	367.0	292.1
1953	298.9	379.2	223.6	292.7	376.5	214.1	355.8	398.3	314.6
1952	299.6	377.8	225.6	292.9	374.7	215.7	362.1	402.8	323.0
1951	302.9	380.6	229.1	296.3	378.0	218.9	364.4	400.5	329.5
1950 ²	307.6	384.2	234.4	300.5	381.1	223.6	375.1	407.5	342.9

[For 1968 and 1969 rates are based on deaths assigned to category numbers 390-398, 402, 404, 410-429 of the *Eighth Revision of the International Classification of Diseases, Adapted for Use in the United States*, adopted in 1965; for 1950-67 rates are based on deaths assigned to category numbers 400-402, 410-443 of the Sixth and Seventh Revisions adopted, respectively, in 1948 and 1955.

¹Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

²Based on enumerated population adjusted for age bias in the population of races other than white.

Source: (1) Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, Maryland, Series 20, No. 16, Table P, p. 41.

(2) Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8; 1971, Vol. 23, No. 3; 1972, Vol. 23, No. 8; 1973, Vol. 23, No. 11; 1974, Vol. 24, No. 11; 1975, Vol. 25, No. 11.

Table 4

Age adjusted death rates and percent change for leading chronic disease conditions in the United States, Selected years from 1950 to 1975.

		Total	Percent	White	Percent	All others	Percent
		Rate	Change	Rate	Change	Rate	Change
Diseases of the Heart	50	307.6		300.5		375.1	
	60	286.2	-7.0	281.5	-6.3	324.2	-13.6
	65	275.6	-3.7	270.6	-3.9	319.4	-1.5
	70	253.6	-8.0	249.1	-7.9	288.9	-9.5
	75	220.5	-13.0	217.2	-12.8	245.2	-15.1
	50-75		-28.3		-27.7		-34.6
Malignant Neoplasms	50	125.4		124.7		128.6	
	60	125.8	0.3	124.2	-0.4	139.3	8.3
	65	127.9	1.7	125.8	1.3	147.7	6.0
	70	129.9	1.6	127.8	1.6	148.3	0.4
	75	130.9	0.8	128.1	0.2	155.0	4.5
	50-75		4.4		2.7		20.5
Cerebro-vascular diseases	50	88.8		83.2		148.8	
	60	79.7	-10.2	74.2	-10.8	134.8	-9.4
	65	73.1	-8.3	67.5	-9.0	129.6	-3.9
	70	66.3	-9.3	61.8	-8.4	107.0	-17.4
	75	54.5	-17.8	51.3	-17.0	82.0	-23.4
	50-75		-38.6		-38.3		-44.9
Diabetes	50	14.3		13.9		17.2	
	60	13.6	-4.9	12.8	-7.9	21.6	25.6
	65	13.5	-0.7	12.5	-2.3	23.6	9.3
	70	14.1	4.4	12.9	3.2	25.2	6.8
	75	11.6	-17.7	10.4	-19.3	21.7	-13.9
	50-75		-18.9		-25.2		+26.2
Arterio-sclerosis	50	16.2		16.2		15.8	
	60	13.2	-18.5	13.1	-19.1	13.8	-12.8
	65	12.0	-9.1	12.0	-8.4	12.3	-10.9
	70	8.4	-30.0	8.4	-30.0	8.2	-33.3
	75	6.6	-21.4	6.6	-21.4	6.1	-25.6
	50-75		-59.3		-59.3		-61.4

Source: (1) Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, Maryland, Series 20, No. 16, Table K, p. 30.

(2) Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8 and 1975, Vol. 25, No. 11.

Table 5

Prevalence of Cerebrovascular disease reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1972

Selected characteristic	All ages	Under 45 years	45-64 years	65 years and over	All ages	Under 45 years	45-64 years	65 years and over
	Prevalence of conditions in thousands				Number per 1,000 persons			
Total ¹	1,534	88	487	960	7.5	0.6	11.5	48.2
Sex								
Male	750	45	257	448	7.6	0.6	12.8	54.0
Female	784	43	230	511	7.4	0.6	10.4	44.0
Color								
White	1,303	63	384	855	7.3	0.5	10.1	47.0
All other	232	*	103	105	9.1	*	25.0	60.0
Family income								
Less than \$3,000	466	*	126	315	23.7	*	34.9	51.3
\$3,000-\$4,999	312	*	71	222	14.7	*	18.1	48.0
\$5,000-\$6,999	225	*	68	145	9.2	*	14.0	54.3
\$7,000-\$9,999	147	*	65	73	4.2	*	9.4	38.2
\$10,000-\$14,999	166	*	76	82	3.3	*	7.6	53.2
\$15,000 or more	150	*	58	81	3.7	*	5.8	54.0
Education of head of family								
Less than 9 years	770	*	208	531	16.7	*	16.7	53.7
9-11 years	230	*	84	126	6.6	*	11.0	41.0
12 years	302	*	110	167	4.6	*	9.0	48.0
13 years or more	207	*	79	117	3.8	*	8.4	38.4
Usual activity								
Usually working (17 years and over)	218	*	152	38	2.9	*	5.6	13.6
Usually keeping house (female, 17 years and over)	508	*	158	321	12.8	*	13.0	33.6
Retired (45 years and over)	533	...	116	418	64.6	...	67.3	64.0
Place of residence								
All SMSA	893	44	289	560	6.8	0.5	10.5	45.9
Central city	527	*	163	338	9.2	*	13.3	52.2
Not central city	366	*	126	222	5.0	*	8.2	38.7
Outside SMSA								
Nonfarm	575	41	180	353	8.9	0.9	14.2	51.8
Farm	67	*	*	46	8.3	*	*	50.9
Geographic region								
Northeast	298	*	94	189	6.2	*	8.6	36.5
North central	389	*	118	255	6.9	*	10.6	46.3
South	574	41	184	348	9.0	0.9	14.4	56.7
West	273	*	91	167	7.6	*	12.4	54.0

[Data are based on household interviews of the civilian, noninstitutionalized population.

¹Includes unknown income and education.

NOTE: Relative standard errors of estimates for this table are found on chart on page 42, code A4AN and page 43, code P4AN-M. A guide to the use of the relative standard error charts is on page 41.

Source: National Center for Health Statistics: Prevalence of Chronic Circulatory Conditions, United States, 1972. DHEW Publication No. (HRA) 75-1521. U.S. Government Printing Office, Washington, D.C., September 1974.

Table 6

Age-adjusted death rates for Cerebrovascular diseases, by color and sex: United States, 1950-69

Year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Rate per 100,000 population									
1975	54.5	60.6	49.8	51.3	57.4	46.8	82.0	89.3	76.1
1974	59.9	66.5	54.9	56.4	63.0	51.4	90.9	98.3	84.7
1973	63.7	70.4	58.5	59.6	66.3	54.5	99.7	106.7	93.8
1972	65.0	72.7	59.1	61.0	68.8	54.9	101.3	107.8	96.0
1971	65.7	72.5	60.2	61.5	68.4	56.1	108.1	115.9	101.7
1970	66.3	73.2	60.8	61.8	68.8	56.2	107.0	113.5	101.4
1969	68.5	74.9	63.3	63.8	70.1	58.6	117.1	124.1	111.1
1968	71.5	78.1	66.0	66.3	72.9	60.9	124.4	132.2	117.9
1967	70.0	76.2	64.9	65.2	71.5	59.9	118.8	124.4	114.1
1966	72.6	78.8	67.3	67.3	73.6	62.0	125.5	131.5	120.3
1965	73.1	79.1	67.9	67.5	73.8	62.1	129.6	134.2	125.5
1964	73.9	79.7	69.1	68.5	74.6	63.3	128.3	131.1	125.8
1963 ¹	76.6	82.5	71.6	71.3	77.6	65.9	133.4	135.7	131.7
1962 ¹	76.8	82.1	72.2	71.5	77.4	66.5	132.5	133.4	132.2
1961	76.7	82.0	72.1	71.4	77.3	66.3	128.8	127.5	130.2
1960	79.7	85.4	74.7	74.2	80.3	68.7	134.8	135.2	134.4
1959	80.7	85.8	76.2	75.3	80.9	70.2	135.7	134.8	136.5
1958	83.0	88.0	78.4	77.4	82.9	72.5	140.0	141.2	139.4
1957	84.2	89.3	79.5	78.6	84.4	73.4	141.1	140.2	142.2
1956	82.3	86.7	78.2	77.0	82.1	72.3	136.8	134.3	139.1
1955	83.0	87.4	79.0	77.7	82.7	73.2	137.8	136.2	139.3
1954	83.0	86.7	79.5	77.6	82.0	73.5	139.0	136.0	142.0
1953	86.9	90.5	83.6	81.5	85.6	77.7	143.9	141.7	145.7
1952	87.8	91.3	84.6	82.3	86.4	78.4	146.9	143.9	149.9
1951	89.0	92.0	86.2	83.6	87.3	80.1	147.3	142.6	152.1
1950 ²	88.8	91.9	86.0	83.2	87.0	79.7	148.8	144.0	153.4

[For 1968 and 1969 rates are based on deaths assigned to category numbers 430-438 of the *Eighth Revision of the International Classification of Diseases, Adapted for Use in the United States*, adopted in 1965; for 1950-67 rates are based on deaths assigned to category numbers 330-334 of the Sixth and Seventh Revisions adopted, respectively, in 1948 and 1955.

¹Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

²Based on enumerated population adjusted for age bias in the population of races other than white.

Source: (1) Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, Maryland, Series 20, No. 16, Table P, p. 41.

(2) Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8; 1971, Vol. 23, No. 3; 1972, Vol. 23, No. 8; 1973, Vol. 23, No. 11; 1974, Vol. 24, No. 11; 1975, Vol. 25, No. 11.

Table 7

Age-adjusted death rates for Arteriosclerosis, by color and sex: United States, 1950-69

Year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Rate per 100,000 population									
1975	6.6	7.5	5.9	6.6	7.5	5.9	6.1	7.0	5.4
1974	7.6	8.6	6.9	7.6	8.7	6.9	7.3	8.2	6.6
1973	8.0	8.9	7.3	8.0	9.0	7.2	7.8	8.5	7.2
1972	8.2	9.3	7.4	8.2	9.3	7.4	8.4	9.6	7.5
1971	8.2	9.0	7.6	8.3	9.1	7.6	7.9	8.4	7.5
1970	8.4	9.5	7.5	8.4	9.6	7.5	8.2	9.1	7.5
1969	9.2	10.1	8.4	9.2	10.2	8.5	9.1	10.1	8.2
1968	9.6	10.5	8.8	9.6	10.6	8.8	9.9	14.0	9.0
1967	11.1	12.2	10.2	11.2	12.3	10.3	10.7	11.8	9.7
1966	11.9	13.2	10.9	11.9	13.2	10.9	12.2	13.2	11.4
1965	12.0	13.4	11.0	12.0	13.4	10.9	12.3	13.6	11.3
1964	12.1	13.2	11.2	12.0	13.1	11.1	12.6	13.6	11.8
1963 ¹	12.5	13.9	11.5	12.5	13.8	11.4	13.4	14.7	12.4
1962 ¹	12.6	13.8	11.6	12.5	13.7	11.5	13.4	15.0	12.1
1961	12.4	13.8	11.3	12.4	13.7	11.2	12.8	14.2	11.5
1960	13.2	14.8	11.8	13.1	14.7	11.7	13.8	15.5	12.3
1959	13.0	14.5	11.8	12.9	14.4	11.7	13.7	15.2	12.3
1958	13.4	15.0	12.1	13.3	14.9	11.9	14.7	16.0	13.7
1957	13.3	14.8	12.1	13.3	14.8	11.9	14.0	15.2	13.1
1956	13.3	14.8	12.0	13.2	14.7	11.9	13.6	14.8	12.5
1955	13.9	15.7	12.4	13.9	15.6	12.4	14.3	16.2	12.5
1954	13.5	14.9	12.2	13.4	14.8	12.1	13.9	15.5	12.6
1953	15.0	16.8	13.5	14.9	16.7	13.4	15.5	17.7	13.5
1952	15.3	16.9	13.9	15.3	16.8	13.9	15.0	17.1	13.1
1951	16.0	17.9	14.4	16.1	17.9	14.5	15.1	17.1	13.1
1950 ²	16.2	18.4	14.3	16.2	18.4	14.3	15.8	18.0	13.7

[For 1968 and 1969 rates are based on deaths assigned to category number 440 of the *Eighth Revision of the International Classification of Diseases, Adapted for Use in the United States*, adopted in 1965; for 1950-67 rates are based on deaths assigned to category number 450 of the Sixth and Seventh Revisions adopted, respectively, in 1948 and 1955.

¹Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

²Based on enumerated population adjusted for age bias in the population of races other than white.

Source: (1) Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, Maryland, Series 20, No. 16, Table P, p. 41.

(2) Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8; 1971, Vol. 23, No. 3; 1972, Vol. 23, No. 8; 1973, Vol. 23, No. 11; 1974, Vol. 24, No. 11; 1975, Vol. 25, No. 11.

Table 8

Prevalence rates of definite and borderline hypertension for White and Black adults, by age and sex: United States, 1960-62

Hypertension and age	Men		Women	
	White	Black	White	Black
Percent of specified group				
Definite				
Total, 18-79 years	12.8	26.7	15.3	26.6
18-24 years	1.7	1.9	0.9	3.4
25-34 years	3.6	12.5	2.3	8.6
35-44 years	11.8	26.5	6.2	25.7
45-54 years	16.5	30.9	15.5	41.3
55-64 years	20.2	44.6	30.6	37.9
65-74 years	25.0	52.7	46.6	64.1
75-79 years	30.3	59.8	44.1	69.5
Borderline				
Total, 18-79 years	17.7	14.9	12.3	11.2
18-24 years	11.6	7.3	1.6	—
25-34 years	11.7	15.4	3.4	1.6
35-44 years	14.9	10.4	8.3	12.3
45-54 years	17.3	23.1	15.4	14.6
55-64 years	28.4	21.7	24.4	27.1
65-74 years	26.6	2.6	24.8	20.8
75-79 years	27.1	21.4	27.3	30.5

Source: National Center for Health Statistics: Hypertension and Hypertensive Heart Disease in Adults, United States, 1960-1962. DHEW Publication No. (NRA) 74-1282, Series 11, No. 13. U.S. Government Printing Office, Washington, D.C., November 1973, Table 2.

Table 9

Prevalence of hypertensive disease, not elsewhere classified, reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1972

Selected characteristic	Prevalence of conditions in thousands				Number per 1,000 persons			
	All ages	Under 45 years	45-64 years	65 years and over	All ages	Under 45 years	45-64 years	65 years and over
Total ¹	12,271	2,949	5,350	3,972	60.1	20.8	126.7	199.4
Sex								
Male	4,564	1,362	2,030	1,172	46.4	19.4	101.3	141.2
Female	7,707	1,587	3,319	2,800	72.9	22.1	149.6	240.9
Color								
White	10,418	2,344	4,538	3,537	58.3	19.1	119.1	194.6
All other	1,852	606	812	435	72.9	31.0	196.8	248.7
Family income								
Less than \$3,000	2,397	291	700	1,406	121.8	29.3	193.6	228.8
\$3,000-\$4,999	1,834	312	600	921	86.7	24.7	153.3	199.1
\$5,000-\$6,999	1,476	387	608	480	60.2	22.8	125.5	179.8
\$7,000-\$9,999	1,777	571	864	342	51.3	22.1	125.3	179.0
\$10,000-\$14,999	2,277	767	1,213	297	44.6	19.4	121.3	192.6
\$15,000 or more	1,794	499	1,052	242	43.8	16.9	105.3	161.4
Education of head of family								
Less than 9 years	4,534	542	1,914	2,077	98.2	22.8	153.5	210.0
9-11 years	2,252	570	1,054	628	64.2	23.4	138.5	204.2
12 years	3,122	1,058	1,400	665	47.5	21.1	114.5	191.0
13 years or more	2,175	736	921	517	39.9	17.5	98.2	169.9
Usual activity								
Usually working (17 years and over)	5,208	1,788	2,936	484	69.4	39.5	108.9	173.3
Usually keeping house (female, 17 years and over)	5,284	882	2,003	2,399	132.8	48.8	164.4	251.4
Retired (45 years and over)	1,165	...	230	935	141.1	...	133.4	143.1
Place of residence								
All SMSA	7,694	1,934	3,365	2,395	58.7	21.2	122.2	196.2
Central city	3,772	879	1,597	1,296	65.7	22.7	130.8	200.3
Not central city	3,923	1,055	1,768	1,099	53.2	20.0	115.4	191.5
Outside SMSA								
Nonfarm	4,069	930	1,732	1,407	62.6	20.4	137.0	206.5
Farm	508	84	253	170	62.7	16.3	123.4	188.3
Geographic region								
Northeast	2,894	631	1,300	964	60.3	19.8	119.1	186.0
North Central	3,120	739	1,318	1,062	55.7	18.8	118.0	192.8
South	4,321	1,075	1,854	1,392	67.4	23.8	145.0	226.8
West	1,935	504	877	554	53.7	19.7	119.3	179.0

[Data are based on household interviews of the civilian, noninstitutionalized population.

¹Includes unknown income and education.

NOTE: Relative standard errors of estimates for this table are found on chart on page 42, code A4AN and page 43, code P4AN-M. A guide to the use of the relative standard error charts is on page 41.

Source: National Center for Health Statistics: Prevalence of Chronic Circulatory Conditions, United States, 1972. DHEW Publication No. (HRA) 75-1521. U.S. Government Printing Office, Washington, D.C., September 1974.

Table 10

Prevalence rates of definite and suspect hypertensive heart disease for White and Black adults, by age and sex: United States, 1960-62

Hypertensive heart disease and age	Men		Women	
	White	Black	White	Black
Definite	Percent of specified group			
Total, 18-79 years	6.5	19.1	9.8	22.2
18-24 years	0.2	1.9	—	1.6
25-34 years	1.1	5.2	0.7	4.7
35-44 years	4.0	15.2	2.7	14.0
45-54 years	7.7	24.4	6.8	31.5
55-64 years	11.7	33.1	19.5	46.4
65-74 years	16.3	50.2	37.5	66.4
75-79 years	24.0	32.3	37.1	69.5
Suspect				
Total, 18-79 years	5.0	7.6	3.3	4.7
18-24 years	1.5	1.5	—	—
25-34 years	1.2	7.3	0.7	—
35-44 years	4.0	6.2	0.8	3.6
45-54 years	4.3	10.5	3.4	5.9
55-64 years	7.3	13.8	8.5	15.0
65-74 years	13.8	—	8.4	10.3
75-79 years	15.7	21.4	10.7	14.2

Source: National Center for Health Statistics: Hypertension and Hypertensive Heart Disease in Adults, United States, 1960-1962. DHEW Publication No. (HRA) 74-1282, Series 11, No. 13. U.S. Government Printing Office, Washington, D.C., November 1973, Table 4.

Table 11

Number and percent of discharges and average length of stay for inpatients discharged from short-stay hospitals, excluding newborn infants, by color and selected first-listed diagnostic conditions: United States, 1968

Color and diagnostic condition and ICDA codes		Number of discharges in thousands	Percent of total discharges	Average length of stay in days
White ¹				
Total all conditions ²		21,629	100.0	8.5
Malignant neoplasms	140-205	839	3.9	15.3
Vascular lesions affecting central nervous system	330-334	394	1.8	16.3
Arteriosclerotic heart disease	420	883	4.1	14.6
Respiratory system diseases:				
Pneumonia, all forms	490-493	535	2.5	10.1
Hypertrophy of tonsils and adenoids	510	814	3.8	2.1
Digestive system diseases:				
Inguinal hernia	560.0, 561.0	402	1.9	7.3
Gastroenteritis	571	408	1.9	5.1
Cholelithiasis and cholecystitis	584-585	397	1.8	11.1
Obstetrical conditions	640-689, Y06-Y07	2,964	13.7	4.1
Fractures, all sites	800-826	816	3.8	13.9
All other ¹				
Total, all conditions ²		2,907	100.0	8.8
Malignant neoplasms	140-205	83	2.8	17.5
Diabetes mellitus	260	49	1.7	14.9
Vascular lesions affecting central nervous system	330-334	48	1.6	19.3
Arteriosclerotic heart disease	420	52	1.8	15.7
Respiratory system diseases:				
Pneumonia, all forms	490-493	86	2.9	8.8
Hypertrophy of tonsils and adenoids	510	80	2.7	2.2
Gastroenteritis	571	42	1.4	6.2
Obstetrical conditions	640-689, Y06-Y07	699	24.0	4.1
Injuries:				
Fractures, all sites	800-826	88	3.0	12.6
Laceration and open wound	870-898	67	2.3	5.9

¹Data are underreported because color was not recorded on the hospital records of an estimated 3.5 million patients.

²Includes data for diagnostic conditions not shown in table.

Source: Department of Health, Education, and Welfare, Inpatient Utilization of Short-stay Hospitals by Diagnosis, U.S. 1968, Series 13, No. 12, p. 12.

Table 12

Age-adjusted death rates for Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues, by color and sex:
United States, 1950-69

Year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Rate per 100,000 population									
1975	130.9	161.4	108.3	128.1	157.2	106.9	155.0	199.7	118.9
1974	131.8	162.3	109.2	129.0	158.3	107.6	156.6	199.0	122.4
1973	130.7	160.1	108.7	127.7	156.2	106.8	156.4	195.9	124.3
1972	130.7	159.8	108.8	128.3	156.4	107.4	152.2	191.2	120.4
1971	130.7	158.5	109.4	127.7	154.6	107.2	160.8	198.7	129.7
1970	129.9	157.4	108.8	127.8	154.3	107.6	148.3	185.3	117.6
1969	129.7	155.9	109.1	126.8	152.1	107.1	158.6	194.9	127.7
1968	130.2	155.9	109.9	127.4	152.3	107.8	158.3	193.3	128.8
1967	129.1	153.6	109.7	126.6	150.3	107.9	154.3	186.6	126.6
1966	128.4	151.9	109.6	125.9	148.9	107.6	152.7	182.3	127.0
1965	127.9	150.2	109.9	125.8	148.0	108.1	147.7	173.3	125.2
1964	126.7	147.9	109.3	124.6	145.6	107.6	145.7	170.1	124.0
1963 ¹	126.7	147.1	109.9	123.7	143.8	107.3	145.1	168.7	124.4
1962 ¹	125.6	144.6	109.9	123.0	142.0	107.4	140.9	159.1	124.7
1961	125.4	143.5	110.2	123.7	142.0	108.5	140.3	157.9	124.3
1960	125.8	143.0	111.2	124.2	141.6	109.5	139.3	154.8	125.0
1959	124.5	140.7	110.8	123.1	139.4	109.4	136.2	152.5	121.3
1958	124.6	139.1	112.2	123.2	138.2	110.6	135.3	146.4	125.3
1957	126.4	140.9	114.0	125.2	139.9	112.6	136.7	149.2	125.2
1956	126.3	139.7	114.8	125.1	139.1	113.2	136.2	145.0	127.8
1955	125.8	137.7	115.5	124.9	137.4	114.3	131.5	138.7	124.7
1954	125.8	136.6	116.4	124.8	136.0	115.1	133.0	140.6	125.9
1953	125.9	135.6	117.5	125.3	135.5	116.4	129.2	133.2	125.1
1952	125.7	133.7	118.8	125.0	133.7	117.6	128.8	130.7	126.8
1951	124.3	130.9	118.7	123.8	131.1	117.5	125.9	125.3	126.4
1950 ²	125.4	130.8	120.8	124.7	130.9	119.4	128.6	125.8	131.0

[For 1968 and 1969 rates are based on deaths assigned to category numbers 140-209 of the *Eighth Revision of the International Classification of Diseases, Adapted for Use in the United States*, adopted in 1965; for 1950-67 rates are based on deaths assigned to category numbers 140-205 of the Sixth and Seventh Revisions adopted, respectively, in 1948 and 1955.]

¹Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

²Based on enumerated population adjusted for age bias in the population of races other than white.

Source: (1) Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69," Rockville, Maryland, Series 20 No. 16, Table K, p. 30.

(2) Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8; 1971, Vol. 23, No. 3; 1972, Vol. 23, No. 8; 1973, Vol. 23, No. 11; 1974, Vol. 24, No. 11; 1975, Vol. 25, No. 11.

Table 13

Comparison of Incidence Rates* for Common Areas in the N.C.I. Surveys of 1947 and 1969 for Selected Sites of Cancer, by Race and Sex

Site	Race	Males				Females			
		Rate in 1947	Rate in 1969	Change in rate	% Change in Rate	Rate in 1947	Rate in 1969	Change in Rate	% Change in Rate
All Sites	White	282.0	300.8	18.8	6.7	294.0	255.5	-38.5	-13.1
	Black	248.0	337.2	89.2	36.0	287.0	242.9	-44.1	-15.4
Esophagus	White	6.1	4.4	-1.7	-27.9	1.7	1.4	-0.3	-17.6
	Black	7.5	15.1	7.6	101.3	1.8	3.4	1.6	88.9
Stomach	White	31.4	12.9	-18.5	-58.9	17.3	5.8	-11.5	-66.5
	Black	34.4	17.8	-16.6	-48.3	18.0	7.9	-10.1	-56.1
Colon-rectum	White	43.2	45.1	1.9	4.4	38.5	34.4	-4.1	-10.6
	Black	25.8	38.6	12.8	49.6	23.2	35.5	12.3	53.0
Pancreas	White	8.8	10.7	1.9	21.6	5.6	6.8	1.2	21.4
	Black	10.8	14.0	3.2	29.6	3.4	7.7	4.3	126.5
Lung	White	28.7	67.0	38.3	133.4	6.5	13.5	7.0	107.7
	Black	22.3	74.4	52.1	233.6	3.8	11.9	8.1	213.2
Female Breast	White	—	—	—	—	70.0	72.5	2.5	3.6
	Black	—	—	—	—	47.8	60.1	12.3	25.7
Cervix Uteri	White	—	—	—	—	38.4	15.3	-23.1	-60.2
	Black	—	—	—	—	74.6	34.2	-40.4	-54.2
Corpus Uteri	White	—	—	—	—	22.4	21.5	-0.9	-4.0
	Black	—	—	—	—	15.6	11.3	-4.3	-27.5
Ovary	White	—	—	—	—	14.7	13.3	-1.4	-9.5
	Black	—	—	—	—	9.0	10.4	1.4	15.6
Prostate	White	36.4	44.7	8.3	22.8	—	—	—	—
	Black	50.7	78.8	28.1	55.4	—	—	—	—
Kidney**	White	5.6	7.8	2.2	39.3	3.1	3.7	0.6	19.4
	Black	4.3	7.1	2.8	65.1	3.0	3.6	0.6	20.0
Bladder	White	16.3	19.7	3.4	20.9	7.0	5.2	-1.8	-25.7
	Black	4.4	9.6	5.2	118.2	5.6	3.2	-2.4	-42.9

*Per 100,000 population standardized for age on 1950 U.S. Census Population.

**Estimated by the authors of this article.

Sources: Cutler, S. J., and Davesa, S. S.: Trends in Cancer Incidence and Mortality in the U.S.A. In: Doll, R. and Vodopija, I.: Host Environment Interactions in the Etiology of Cancer in Man. International Agency for Research on Cancer, Lyon, 1970. Cramer, D. W. and Cutler, S. J.: Incidence and histopathology of malignancies of the female genital organs in the United States, Amer. J. Obstet. Gynec. 118: 443-460, 1974.

American Cancer Society: Cancer Statistics, 1976. (Herbert Seidman, Edwin Silverberg, Arthur Holleb) Professional Education Publications, 1976.

Table 14

Percent of Cancer Cases Diagnosed in a Localized Stage and Five-Year Survival Rates** by Race and Sex for all Stages and Localized Stage for Selected Sites, End Results Group, 1955-1964

Site of Cancer	Race	Males			Females		
		Percent Diagnosed in Localized State	5-Year Survival Rate All Stages	Localized Stage	Percent Diagnosed in Localized Stage	5-Year Survival Rate All Stages	Localized Stage
All Sites	White	38	31	59	42	47	74
	Black	29	21	49	32	37	69
All Sites Adjusted***	White	38	31	59	42	47	74
	Black	29	22	51	32	36	68
Esophagus	White	34	3	5	37	7	12
	Black	25	1	3	30	4	7*
Stomach	White	17	9	38	20	12	41
	Black	10	7	36*	11	11	53*
Colon-Rectum	White	43	41	67	42	46	72
	Black	34	31	59	31	36	67
Pancreas	White	14	1	4	15	2	5
	Black	11	1	3*	14	3	8*
Lung	White	18	8	20	19	11	34
	Black	17	6	16	13	6*	10*
Female Breast	White	—	—	—	45	62	84
	Black	—	—	—	31	47	77
Cervix Uteri	White	—	—	—	52	60	79
	Black	—	—	—	40	51	78
Corpus Uteri	White	—	—	—	74	72	83
	Black	—	—	—	51	40	63
Ovary	White	—	—	—	28	32	72
	Black	—	—	—	25	28	74*
Prostate	White	57	51	64	—	—	—
	Black	48	41	58	—	—	—
Bladder	White	76	56	68	72	56	71
	Black	53	29	46	47	27	48*
Kidney	White	43	35	63	48	38	60
	Black	43	39	67*	47	42	71*

*Rates have standard error between 5 and 10 percent.

**Adjusted for normal life expectancy.

***White and black male figures are adjusted to the site distribution of the total male cancer cases. White and black female figures are adjusted to the site distribution of the total female cancer cases.

Source: Axtell, L. M., Myers, M. H., and Shambaugh, E. M.: Treatment and Survival Patterns for Black and White Cancer Patients Diagnosed 1955 Through 1964. DHEW Publication No. (NIH) 75-712. Washington U.S. Printing Office, 1975.

American Cancer Society: Cancer Statistics, 1976, (Herbert Seidman, Edwin Silverberg, Arthur Holleb) Professional Education Publications, 1976.

Table 15

Comparison of Death Rates* for United States, 1950 and 1973, for Selected Sites of Cancer, by Race and Sex

Site	Race	Males				Females			
		Rate in 1950	Rate in 1973	Change in Rate	% Change in Rate	Rate in 1950	Rate in 1973	Change in Rate	% Change in Rate
All Sites	White	144.7	172.9	28.2	19.5	130.5	115.8	-14.7	-11.3
	Nonwhite	136.6	216.8	80.2	58.7	139.8	135.6	-4.2	-3.1
Esophagus	White	3.9	3.7	-0.2	-5.2	1.0	1.0	0.0	0.0
	Nonwhite	7.0	12.1	5.1	72.9	1.9	3.3	1.4	73.7
Stomach	White	20.4	7.8	-12.6	-61.8	11.1	3.7	-7.4	-66.7
	Nonwhite	28.2	16.1	-12.1	-42.9	14.5	7.0	-7.5	-51.7
Colon- Rectum	White	23.2	23.2	0.0	0.0	22.0	18.0	-4.0	-18.2
	Nonwhite	15.6	18.5	2.9	18.6	16.7	17.3	0.6	3.6
Pancreas	White	7.2	9.6	2.4	33.3	4.8	5.6	0.8	16.7
	Nonwhite	5.8	11.3	5.5	94.8	3.7	7.3	3.6	97.3
Lung	White	20.6	54.5	33.9	164.6	4.4	12.4	8.0	181.8
	Nonwhite	15.5	65.7	50.2	323.9	3.7	12.8	9.1	245.9
Female Breast	White	—	—	—	—	24.5	25.4	0.9	3.7
	Nonwhite	—	—	—	—	20.3	24.0	3.7	18.2
Uterus	White	—	—	—	—	19.0	8.1	-10.9	-57.4
	Nonwhite	—	—	—	—	40.6	19.1	-21.5	-53.0
Prostate	White	15.7	15.4	-0.3	-1.9	—	—	—	—
	Nonwhite	19.6	28.3	8.7	44.4	—	—	—	—
Bladder	White	6.1	5.9	-0.2	-3.3	2.6	1.6	-1.0	-38.5
	Nonwhite	4.3	4.6	0.3	7.0	3.0	2.4	-0.6	-20.0
Kidney	White	3.2	4.1	0.9	28.1	1.8	1.9	0.1	5.6
	Nonwhite	1.9	3.2	1.3	68.4	1.3	2.0	0.7	53.8

*Per 100,000 population standardized for age on 1950 U.S. Census Population.

U.S. National Center for Health Statistics.

American Cancer Society: Cancer Statistics, 1976. (Herbert Seidman, Edwin Silverberg, Arthur Holleb)

Professional Education Publications, 1976.

Table 16

Prevalence of diabetes reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1973

Characteristic	Prevalence of conditions in thousands					Number per 1,000 persons				
	All ages	Under 17 years	17-44 years	45-64 years	65 years and over	All ages	Under 17 years	17-44 years	45-64 years	65 years and over
Total ¹	4,191	86	704	1,813	1,589	20.4	1.3	8.9	42.6	78.5
Sex										
Male	1,620	35	261	819	506	16.3	1.1	6.9	40.6	60.3
Female	2,571	51	443	993	1,083	24.1	1.6	10.8	44.4	91.3
Color										
White	3,570	74	576	1,518	1,402	19.9	1.4	8.3	39.6	75.9
All other	622	*	128	294	187	23.9	*	12.8	70.0	104.5
Family income										
Less than \$3,000	737	*	50	234	445	45.0	*	9.8	81.4	89.0
\$3,000-\$4,999	666	*	70	236	350	35.9	*	12.9	68.0	74.8
\$5,000-\$6,999	512	*	67	202	236	23.8	*	8.5	48.5	77.7
\$7,000-\$9,999	519	*	117	238	153	17.3	*	9.5	40.4	74.1
\$10,000-\$14,999	733	*	181	372	151	14.4	*	8.4	37.8	81.1
\$15,000 or more	693	*	178	387	110	12.9	*	8.0	30.5	62.7
Education of head of family										
Less than 9 years	1,665	*	149	667	833	38.0	*	13.7	56.6	84.3
9-11 years	805	*	122	387	271	22.5	*	9.6	48.5	86.9
12 years	935	*	220	438	253	13.9	*	7.7	34.5	68.8
13 years or more	723	*	204	298	204	12.8	*	7.8	31.2	63.6
Usual activity status										
School age (6-16 years)	76	76	...	...	...	1.7	1.7	...	...	...
Usually working (17 years and over)	1,393	...	410	856	128	18.0	...	8.6	31.5	48.8
Usually keeping house (female, 17 years and over)	1,754	...	219	666	869	44.1	...	12.3	55.1	88.4
Retired (45 years and over)	669	...	...	201	468	74.6	...	...	97.6	67.8
Other (17 years and over)	289	...	75	89	125	18.2	...	5.5	73.1	139.4
Place of residence										
SMSA	2,863	64	520	1,249	1,030	20.2	1.5	9.3	42.6	79.3
Central city	1,431	*	261	598	548	23.0	*	10.7	46.3	84.5
Not central city	1,431	40	259	651	482	18.0	1.6	8.2	39.7	74.1
Outside SMSA	1,328	*	184	564	559	20.7	*	7.9	42.7	76.9
Nonfarm	1,178	*	165	500	492	20.8	*	7.9	44.8	76.9
Farm	150	*	*	64	68	20.4	*	*	31.0	78.3
Geographic region										
Northeast	984	*	154	425	384	20.2	*	8.4	39.6	74.9
North Central	1,187	*	199	505	456	21.1	*	9.3	43.5	79.9
South	1,355	*	199	617	521	20.8	*	7.9	47.2	83.5
West	665	*	151	266	228	18.7	*	10.6	37.4	71.8

[Data are based on household interviews of the civilian, noninstitutionalized population.

¹Includes unknown income, education, and other groups not listed under usual activity status.

NOTE: The approximate relative standard errors of the estimates shown in this table are found on pages 58 and 59.

Source: "Prevalence of Chronic Conditions of the Genitourinary, Nervous, Endocrine, Metabolic, and Blood and Blood-forming Systems and of Other Selected Chronic Conditions, United States—1973, Vital and Health Statistics, Series 10, No. 109, U.S. Dept. of HEW, Public Health Service.

Table 17

Age-adjusted death rates for Diabetes mellitus, by color and sex: United States, 1950-69

Year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Rate per 100,000 population									
1975	11.6	11.4	11.6	10.4	10.7	10.2	21.7	17.9	24.6
1974	12.5	12.2	12.7	11.4	11.5	11.2	23.4	18.8	27.1
1973	13.2	12.9	13.3	11.8	12.0	11.6	25.3	21.1	28.6
1972	13.6	13.2	13.9	12.2	12.3	12.1	26.0	21.2	30.1
1971	13.8	13.2	14.2	12.4	12.4	12.4	27.5	21.7	32.4
1970	14.1	13.5	14.4	12.9	12.7	12.8	25.2	20.4	28.3
1969	14.5	13.6	15.1	13.2	12.8	13.3	27.7	21.3	33.2
1968	14.7	14.0	15.3	13.4	13.2	13.5	28.0	21.3	33.7
1967	13.7	12.9	14.6	12.7	12.4	12.8	24.5	18.5	29.7
1966	13.9	12.8	14.5	12.7	12.3	13.0	24.8	18.3	30.5
1965	13.5	12.5	14.4	12.5	11.9	12.9	23.6	18.1	28.6
1964	13.5	12.4	14.4	12.5	11.8	12.9	23.6	17.6	29.0
1963 ¹	13.8	12.4	14.9	12.7	11.9	13.3	23.1	16.6	29.1
1962 ¹	13.5	12.3	14.5	12.5	11.8	13.1	21.8	16.1	27.1
1961	13.3	11.7	14.6	12.5	11.4	13.3	21.0	14.9	26.7
1960	13.6	12.0	15.0	12.8	11.6	13.7	21.6	16.1	26.8
1959	13.0	11.3	14.5	12.4	11.0	13.5	19.4	14.1	24.2
1958	13.0	11.3	14.6	12.5	11.1	13.6	18.8	13.0	24.3
1957	13.2	11.1	15.2	12.7	10.9	14.3	18.2	12.5	23.6
1956	13.0	11.0	14.8	12.6	10.9	14.0	17.1	11.7	22.2
1955	13.0	10.9	14.8	12.6	10.9	14.1	16.5	11.2	21.6
1954	13.1	10.9	15.2	12.8	10.9	14.5	16.4	11.3	21.2
1953	13.9	11.2	16.3	13.5	11.2	15.6	17.2	11.3	22.9
1952	14.1	11.5	16.4	13.8	11.5	15.8	16.5	11.5	21.5
1951	14.2	11.3	16.9	13.9	11.2	16.4	16.6	11.8	21.3
1950 ²	14.3	11.4	17.1	13.9	11.3	16.4	17.2	11.8	22.6

[For 1968 and 1969 rates are based on deaths assigned to category number 250 of the *Eighth Revision of the International Classification of Diseases, Adapted for Use in the United States*, adopted in 1965; for 1950-67 rates are based on deaths assigned to category number 260 of the Sixth and Seventh Revisions adopted, respectively, in 1948 and 1955.]

¹Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

²Based on enumerated population adjusted for age bias in the population of races other than white.

Source: (1) Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, Maryland, Series 20 No. 16, Table K, p. 30.

(2) Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8; 1971, Vol. 23, No. 3; 1972, Vol. 23, No. 8; 1973, Vol. 23, No. 11; 1974, Vol. 24, No. 11; 1975, Vol. 25, No. 11.

Table 18

Age-Adjusted Death Rates Indians and Alaskan Natives in 24 Reservation States Compared to U.S. Calendar Year 1971

	Indian Health Service	U.S. ¹ Total	White	All Other	Ratio of IHS to U.S.
All Causes	935.5	730.9	694.4	1,046.2	1.3
Major cardiovascular diseases	251.1	352.0	341.4	457.9	0.7
Diseases of heart	182.6	262.3	257.1	312.8	0.7
Cerebrovascular Disease	32.8	68.5	63.8	124.1	0.5
Arteriosclerosis	12.0	9.2	9.2	9.1	1.3
Hypertension	2.6	3.0	2.4	9.5	0.9
Accidents	183.0	55.3	52.6	75.5	3.3
Motor Vehicle	96.5	28.5	27.9	33.7	3.4
All other	86.5	26.8	24.8	41.8	3.2
Malignant Neoplasms	84.4	129.7	126.8	158.6	0.7
Cirrhosis of Liver	66.8	14.2	12.9	24.0	4.7
Influenza and Pneumonia	41.6	24.6	22.3	41.9	1.7
Diabetes Mellitus	31.7	14.5	13.2	27.7	2.2
Tuberculosis, all forms	10.6	2.3	2.8	8.0	4.6
Bronchitis	6.6	12.0	12.0	10.0	0.6

¹1969 rates (latest available)

Source: Department of Health, Education, and Welfare, Public Health Service, "Indian Health Trends and Services," 1974 Edition, Table 4.2, p. 33.

Table 19

Percent distribution of diabetics, by age at diagnosis of diabetes according to sex and color: United States, July 1964-June 1965

Color and age at diagnosis	Both sexes	Male	Female
Total	Percent distribution		
All ages	100.0	100.0	100.0
Under 15 years	4.1	*5.1	*3.4
Under 25 years	7.7	9.1	6.5
25-44 years	21.8	23.0	21.0
45-64 years	49.8	48.6	50.6
65 years and over	20.0	18.6	21.1
Unknown	*0.7	*0.7	*0.7
White			
Under 15 years	4.6	*5.6	*3.9
Under 25 years	8.3	9.4	7.4
25-44 years	21.1	22.6	20.0
45-64 years	49.3	48.3	50.0
65 years and over	20.6	18.9	22.0
Unknown	*0.7	*0.8	*0.7
Nonwhite			
Under 15 years	*0.3	*	*0.5
Under 25 years	*3.4	*5.6	*2.4
25-44 years	26.9	*28.1	26.4
45-64 years	53.5	51.7	54.3
65 years and over	15.8	*15.7	*15.9
Unknown	*0.3	*	*0.5

[Data are based on household interviews of the civilian, noninstitutional population.]

Source: "Characteristics of Persons with Diabetes, United States, July 1964-June 1965" Vital and Health Statistics, Series 10, No. 40, U.S. Dept. of HEW, Public Health Service.

Table 20

Prevalence of chronic sinusitis and hay fever, without asthma (includes upper respiratory allergy), reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1970

Characteristic	All ages	Under 17 years	17-44 years	45-64 years	65 years and over	All ages	Under 17 years	17-44 years	45-64 years	65 years and over
	Prevalence of conditions in thousands					Number per 1,000 persons				
Sinusitis										
Total ¹	20,582	1,917	9,515	6,564	2,586	103.0	28.7	130.6	158.9	136.1
Sex										
Male	8,913	1,007	3,973	2,951	983	92.6	29.7	114.9	150.2	121.5
Female	11,668	910	5,542	3,613	1,604	112.6	27.8	144.9	166.8	147.1
Color										
White	19,266	1,786	8,884	6,132	2,464	110.0	31.7	138.8	164.2	141.1
All other	1,316	131	630	432	122	53.2	12.6	71.2	109.1	79.2
Family income										
Less than \$3,000	2,478	93	573	731	1,081	118.7	20.1	103.1	182.9	161.5
\$3,000-\$4,999	2,279	155	771	764	590	107.6	23.4	121.8	183.3	145.2
\$5,000-\$6,999	2,729	186	1,324	923	296	99.9	19.8	130.4	166.2	134.4
\$7,000-\$9,999	3,914	425	2,122	1,167	199	98.7	28.8	136.3	153.7	113.6
\$10,000-\$14,999	5,008	599	2,765	1,491	154	106.6	34.8	144.0	163.9	108.3
\$15,000 or more	2,968	324	1,567	993	83	98.1	33.2	131.0	134.2	73.5
Hay fever, without asthma										
Total ¹	10,826	2,291	5,683	2,146	706	54.2	34.3	78.0	52.0	37.2
Sex										
Male	4,936	1,273	2,552	823	287	51.3	37.5	73.8	41.9	35.5
Female	5,890	1,017	3,131	1,323	419	56.9	31.0	81.8	61.1	38.4
Color										
White	9,845	2,095	5,169	1,934	646	56.2	37.2	80.8	51.8	37.0
All other	981	196	514	212	60	39.6	18.8	58.1	53.6	39.0
Family income										
Less than \$3,000	967	88	397	200	282	46.3	19.0	71.4	50.1	42.1
\$3,000-\$4,999	869	137	341	234	157	41.0	20.7	53.9	56.1	38.6
\$5,000-\$6,999	1,222	251	669	231	71	44.7	26.7	65.9	41.6	32.2
\$7,000-\$9,999	1,994	410	1,134	405	*	50.3	27.8	72.8	53.3	*
\$10,000-\$14,999	2,997	741	1,722	468	66	63.8	43.0	89.7	51.4	46.4
\$15,000 or more	2,253	556	1,171	488	*	74.5	56.9	97.9	65.9	*

[Data are based on household interviews of the civilian, noninstitutional population.

¹Includes unknown income and education.

Source: National Center for Health Statistics: Prevalence of Selected Chronic Respiratory Conditions, United States—1970. DHEW Publication No. (HRA) 74-1511, Series 10, No. 84, U.S. Government Printing Office, Washington, D.C., September 1973. Tables 5 and 9.

Table 21

Prevalence of chronic bronchitis reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1970

Characteristic	Prevalence of conditions in thousands					Number per 1,000 persons				
	All ages	Under 17 years	17-44 years	45-64 years	65 years and over	All ages	Under 17 years	17-44 years	45-64 years	65 years and over
Total ¹	6,526	2,592	1,691	1,461	782	32.7	38.9	23.2	35.4	41.2
Sex										
Male	2,999	1,479	577	560	383	31.2	43.6	16.7	28.5	47.3
Female	3,527	1,113	1,114	902	399	34.0	34.0	29.1	41.6	36.6
Color										
White	6,031	2,356	1,565	1,368	742	34.4	41.8	24.5	36.6	42.5
All other	495	236	126	93	*	20.0	22.7	14.2	23.5	*
Family income										
Less than \$3,000	825	139	157	218	310	39.5	30.0	28.3	54.6	46.3
\$3,000-\$4,999	741	240	180	143	178	35.0	36.2	28.4	34.3	43.8
\$5,000-\$6,999	847	342	179	241	86	31.0	36.4	17.6	43.4	39.0
\$7,000-\$9,999	1,282	559	394	268	61	32.3	37.9	25.3	35.3	34.8
\$10,000-\$14,999	1,531	809	419	264	*	32.6	46.9	21.8	29.0	*
\$15,000 or more	932	379	283	224	*	30.8	38.8	23.7	30.3	*

[Data are based on household interviews of the civilian, noninstitutional population.

¹Includes unknown income and education.

Source: National Center for Health Statistics: Prevalence of Selected Chronic Respiratory Conditions, United States—1970. DHEW Publication No. (HRA) 74-1511, Series 10, No. 84, U.S. Government Printing Office, Washington, D.C., September 1973. Table 1.

Table 22

Prevalence of asthma, with or without hay fever and hypertrophy of tonsils and adenoids reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1970

Characteristic	All ages	Under 65 years and over					All ages	Under 65 years and over				
		6 years	6-16 years	17-44 years	45-64 years	65 years and over		6 years	6-16 years	17-44 years	45-64 years	65 years and over
	Prevalence of conditions in thousands						Number per 1,000 persons					
Asthma												
Total ¹	6,031	636	1,439	1,906	1,369	681	30.2	29.3	32.0	26.2	33.1	35.8
Sex												
Male	3,047	408	870	852	576	342	31.7	36.8	38.1	24.6	29.3	42.3
Female	2,984	228	569	1,054	794	339	28.8	21.5	25.7	27.6	36.7	31.1
Color												
White	5,167	501	1,176	1,683	1,193	615	29.5	27.9	30.7	26.3	31.9	35.2
All other	864	135	263	223	176	66	34.9	36.4	39.2	25.2	44.5	42.9
Family income												
Less than \$3,000	912	55	114	185	255	303	43.7	32.9	38.4	33.3	63.8	45.3
\$3,000-\$4,999	739	68	127	220	182	142	34.9	28.6	29.9	34.8	43.7	34.9
\$5,000-\$6,999	789	109	184	235	192	69	28.9	31.1	31.2	23.1	34.6	31.3
\$7,000-\$9,999	1,164	159	324	373	248	60	29.4	30.8	33.8	24.0	32.7	34.3
\$10,000-\$14,999	1,203	154	335	468	216	*	25.6	29.1	28.0	24.4	23.7	*
\$15,000 or more	830	61	251	321	168	*	27.4	25.3	34.1	26.8	22.7	*
Hypertrophy of tonsils and adenoids												
Total ¹	4,359	1,107	1,887	1,140	164	61	21.8	51.1	41.9	15.7	4.0	3.2
Sex												
Male	1,913	604	868	371	*	*	19.9	54.5	38.0	10.7	*	*
Female	2,447	503	1,019	769	114	*	23.6	47.5	46.0	20.1	5.3	*
Color												
White	3,855	1,047	1,687	955	121	*	22.0	58.2	44.0	14.9	3.2	*
All other	504	60	200	185	*	*	20.4	16.2	29.8	20.9	*	*
Family income												
Less than \$3,000	432	54	113	170	56	*	20.7	32.3	38.1	30.6	14.0	*
\$3,000-\$4,999	490	96	216	135	*	*	23.1	40.4	50.9	21.3	*	*
\$5,000-\$6,999	639	142	296	191	*	*	23.4	40.5	50.2	18.8	*	*
\$7,000-\$9,999	930	284	388	224	*	*	23.5	55.0	40.5	14.4	*	*
\$10,000-\$14,999	1,075	332	488	232	*	*	22.9	62.8	40.8	12.1	*	*
\$15,000 or more	571	133	294	133	*	*	18.9	55.2	39.9	11.1	*	*

[Data are based on household interviews of the civilian, noninstitutional population.

¹Includes unknown income and education.

Source: National Center for Health Statistics: Prevalence of Selected Chronic Respiratory Conditions, United States—1970. DYEW Publication No. (HRA) 74-1511, Series 10, No. 84, U.S. Government Printing Office, Washington, D.C., September 1973. Tables 3 and 4.

Table 23

Tuberculosis Morbidity Rates Per 100,000 population for American Indians and Alaskan Natives, U.S., 1955-1975

CY	Indian and Alaska Natives	Indian	Alaska Native	U.S. All Races	U.S. White	U.S. All Other
1975	102.2	102.4	100.5	15.7 ¹	NA	NA
1974	79.8	74.5	122.4	14.4	9.7	45.1
1973	107.6	102.4	150.7	14.8	10.2	46.3
1972	100.6	94.3	15.4	15.8	10.8	50.3
1971	157.4	152.0	200.3	17.1	11.7	53.8
1970	154.1	154.1	154.0	18.3	12.4	59.0
1969	140.8	141.6	134.3	19.1	13.7	59.7
1968	133.8	128.0	179.1	21.3	15.3	65.1
1967	155.8	152.7	179.8	23.0	16.6	70.2
1966	141.7	127.8	247.8	24.4	17.9	71.9
1965	201.5	160.5	507.8	25.3	18.6	74.9
1964	237.8	184.1	630.2	26.6	19.9	76.5
1963	234.0	192.3	534.9	28.7	21.7	81.5
1962	257.7	209.4	604.7	28.9	21.9	80.1
1961	318.8	284.8	562.8	37.0		
1960	322.4	292.3	547.5	39.4		
1959	418.0	338.2	1,048.0	42.6		
1958	485.0	421.8	978.7	47.5		
1957	565.2	426.9	1,649.7	51.0		
1956	680.6	474.3	2,283.8	54.1		
1955	758.1	563.2	2,325.7	60.1		

¹Provisional, Morbidity and Mortality Vol. 24, No. 54.

Source: Trajectory of Indian Health Care, USDHEW, Public Health Service, Indian Health Service, 1977.

Table 24

Tuberculosis Mortality American Indians and Alaskan Natives in Reservation States and U.S. All Races Calendar Years 1955-1975, Rates per 100,000 Population¹

Year	American Indian and Alaskan Native		American Indian		Alaskan Native		U.S. All Races		Ratio American Indian and Alaskan Native to U.S. All Races
	Number of Deaths	Rate	Number of Deaths	Rate	Number of Deaths	Rate	Number of Deaths	Rate	
1975	64	7.7	62	7.9	2	3.5	3,300 ²	1.5 ²	5.1
1974	59	7.1	51	7.0	8	8.7	3,513	1.7	4.4
1973	46	7.2	42	7.0	4	9.4	3,875	1.8	4.0
1972	61	7.3	58	7.2	3	7.7	4,326	2.1	3.5
1971	56	8.3	51	8.2	5	10.4	4,501	2.2	3.8
1970	63	9.7	55	9.6	8	11.2	5,217	2.6	3.7
1969	86	11.1	82	11.0	4	12.7	5,567	2.8	4.0
1968	78	12.8	71	12.8	7	12.9	6,292	3.1	4.1
1967	90	13.5	82	13.4	8	14.3	6,901	3.5	3.9
1966	91	15.3	85	15.4	6	15.3	7,625	3.9	3.9
1965	104	19.0	96	19.3	8	16.0	7,934	4.1	4.6
1964	111	21.8	103	21.6	8	24.0	8,303	4.3	5.1
1963	130	25.1	114	24.8	16	28.5	9,311	4.9	5.1
1962	150	26.0	137	25.3	13	34.0	9,506	5.1	5.1
1961	120	25.4	105	24.5	15	34.8	9,938	5.4	4.7
1960	115	26.6	98	25.1	17	43.1	10,866	6.1	4.3
1959	163	29.0	140	27.9	23	41.8	11,456	6.5	4.5
1958	150	34.3	138	31.5	12	65.1	12,361	7.1	4.8
1957	186	38.2	143	34.2	43	83.3	13,324	7.8	4.9
1956	212	46.2	171	40.2	41	116.8	14,054	8.4	5.5
1955	253	55.1	208	47.3	45	157.5	14,940	9.1	6.1

¹Indian and Alaskan Native rates are three-year averages 1955 through 1974. All other rates are based on single year data.

²Provisional figures—Monthly Vital Statistics Report, Vol. 24, No. 13.

Source: Trajectory of Indian Health Care, USDHEW, Public Health Service, Indian Health Service, 1977.

Table 25

Age-adjusted Death Rates for Tuberculosis (all forms), by color: United States, 1970-1975

Year	Total Rate per 100,000 Population	White	All Other	All Other/White Ratio
1970	2.2	1.6	6.8	4.25
1971	1.8	1.3	6.6	5.08
1972	1.7	1.3	5.9	4.54
1973	1.5	1.1	5.2	4.73
1974	1.3	0.9	4.6	5.11
1975	1.2	0.9	4.0	4.4

Source: Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8; 1971, Vol. 23, No. 3; 1972, Vol. 23, No. 8; 1973, Vol. 23, No. 11; 1974, Vol. 24, No. 11; 1975, Vol. 25, No. 11.

Table 26

Death rates for tuberculosis, by poverty status of area of residence and race for 19 selected cities: United States, 1969-71 average

City	Total			Poverty areas			Nonpoverty areas		
	White	All other		White	All other		White	All other	
		Total	Black		Total	Black		Total	Black
Atlanta	3.2	5.2	—	7.5	6.2	—	2.4	3.9	—
Baltimore	7.1	10.7	10.7	16.0	14.2	14.2	5.5	5.8	5.7
Buffalo	3.7	7.8	—	10.5	10.9	—	2.8	1.1	—
Chicago	4.7	6.8	7.1	19.3	9.2	9.4	3.4	3.7	4.0
Cincinnati	5.1	11.0	11.2	15.0	14.1	14.2	3.0	4.8	4.9
Cleveland	4.4	5.6	—	5.0	7.9	—	4.4	2.8	—
Dallas	11.8	—	3.6	18.9	—	4.1	11.1	—	2.0
Denver	3.3	2.4	2.8	6.5	3.0	3.6	2.4	1.9	2.3
Indianapolis	2.5	5.1	5.2	10.0	10.8	10.9	1.9	1.2	1.3
Los Angeles ²	3.6	4.0	4.4	9.4	4.9	5.1	2.9	2.9	3.2
Memphis	1.5	4.3	—	4.1	4.4	—	1.1	2.6	—
Minneapolis	2.2	1.2	—	5.0	2.6	—	1.7	—	—
New York City	3.0	9.5	9.9	5.2	12.4	12.6	2.5	5.5	6.0
Bronx County	2.8	5.7	6.2	4.1	7.8	8.4	2.3	2.6	2.6
Kings County	3.1	10.4	10.8	4.5	12.2	12.4	2.7	6.4	7.1
New York County	4.5	14.5	15.3	7.6	16.6	16.8	3.7	9.9	11.5
Queens County	2.0	4.7	5.2	38.2	9.0	9.1	1.9	4.1	4.6
Richmond County	2.3	5.6	6.3	...	...	...	2.3	5.6	6.3
Philadelphia	5.2	9.4	—	14.3	13.5	—	4.0	5.0	—
Pittsburgh	4.0	10.5	—	11.3	13.5	—	2.9	5.2	—
San Diego	1.9	0.9	0.6	4.9	1.8	1.1	1.6	—	—
San Francisco	4.1	2.8	2.1	12.9	4.6	3.0	2.5	1.8	1.3
Seattle	1.5	3.5	1.8	4.6	8.9	—	1.3	1.9	2.3
Washington, D.C.	5.4	8.1	—	20.9	10.7	—	3.9	6.2	—

[Rates per 100,000 population in specified group enumerated as of April 1, 1970. Population data not available to compute rates for the Spanish-heritage population]

¹Includes all races other than Negro.

²Average of 1969 and 1970.

Source: National Center for Health Statistics: Selected Vital and Health Statistics in Poverty and Nonpoverty Areas of 19 Large Cities United States, 1969-71. DHEW Publication No. (HRA) 76-1904, Series 21, No. 26, U.S. Government Printing Office, Washington, D.C., November 1975. Table 12.

Table 27

Age-adjusted death rates for Bronchitis, emphysema, and asthma, by color and sex: United States, 1950-69

Year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Rate per 100,000 population									
1975	8.6	14.6	4.1	8.8	15.1	4.1	6.3	9.6	3.5
1974	9.2	15.9	4.3	9.4	16.4	4.4	6.4	10.4	3.2
1973	10.4	18.2	4.5	10.6	18.8	4.6	7.5	12.0	3.8
1972	11.0	19.3	4.8	11.3	19.9	4.8	8.0	12.7	4.2
1971	11.2	19.5	4.7	11.3	19.9	4.7	8.9	13.9	4.8
1970	11.6	20.4	4.8	11.8	21.0	4.7	9.1	14.1	4.9
1969	12.0	21.1	4.7	12.0	21.6	4.6	10.0	15.7	5.1
1968	12.9	22.8	5.1	13.0	23.2	4.9	11.3	17.7	5.8
1967	12.1	21.4	4.7	12.2	21.8	4.5	10.3	15.9	5.5
1966	12.2	21.4	4.6	12.3	21.9	4.4	10.0	15.6	5.0
1965	11.6	20.4	4.4	11.7	20.7	4.3	9.8	15.2	5.0
1964	10.5	18.1	4.0	10.5	18.5	3.9	9.0	13.9	4.7
1963 ¹	10.6	18.3	4.1	10.7	18.8	3.9	9.7	14.2	5.6
1962 ¹	9.2	15.6	3.6	9.2	16.0	3.5	8.4	12.1	5.1
1961	8.2	13.7	3.3	8.1	13.9	3.2	7.9	11.5	4.7
1960	8.2	13.7	3.5	8.2	13.8	3.3	8.0	11.2	5.1
1959	7.3	12.1	3.0	7.2	12.2	2.8	7.2	9.9	4.7
1958	6.9	11.4	2.9	6.8	11.5	2.7	6.9	9.3	4.7
1957	7.3	11.7	3.3	7.1	11.7	3.1	7.9	10.9	5.0
1956	6.2	9.9	2.9	6.2	10.0	2.8	5.9	8.0	3.9
1955	5.9	9.1	3.0	5.9	9.2	2.9	5.6	7.5	3.8
1954	5.8	8.7	3.1	6.1	8.8	3.0	5.3	7.1	3.7
1953 ²	4.8	6.6	3.1	4.7	6.6	2.9	5.0	5.8	4.1
1952 ²	4.9	6.7	3.2	4.8	6.7	3.1	5.5	6.3	4.6
1951 ²	5.0	6.8	3.3	4.9	6.8	3.2	5.1	5.7	4.5
1950 ^{2,3}	3.7	4.7	2.7	3.6	4.7	2.6	4.2	4.7	3.6

[For 1968 and 1969 rates are based on deaths assigned to category numbers 490-493 of the *Eighth Revision of the International Classification of Diseases, Adapted for Use in the United States*, adopted in 1965; for 1950-67 rates are based on deaths assigned to category numbers 501, 502, 527.1, and 241 of the Sixth and Seventh Revisions adopted, respectively, in 1948 and 1955.

¹Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

²Excludes data for ICD No. 527.1, because for these years data were not available by age, color, and sex.

³Based on enumerated population adjusted for age bias in the population of races other than white.

Source: (1) Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69," Rockville, Maryland, Series 20 No. 16, Table K, p. 30.

(2) Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8; 1971, Vol. 23, No. 3; 1972, Vol. 23, No. 8; 1973, Vol. 23, No. 11; 1974, Vol. 24, No. 11; 1975, Vol. 25, No. 11.

Table 28

Prevalence of selected chronic conditions reported in health interviews by selected demographic characteristics: Persons 17-44 years, United States

Demographic characteristic	Arthri- tis	Asthma	Chronic bron- chitis	Diabe- tes	Heart condi- tions	Hyper- tension (without heart involve- ment	Impair- ment of back or spine (except paraly- sis)	Hearing impair- ments	Vision impair- ments
	(1969)	(1970)	(1970)	(1973)	(1972)	(1972)	(1971)	(1971)	(1971)
Number per 1,000 persons 17-44 years									
Total ¹	40.3	26.2	23.2	8.9	24.6	37.8	49.0	42.4	31.9
Sex									
Male	28.0	24.6	16.7	6.9	19.5	36.4	51.9	51.4	44.7
Female	51.3	27.6	29.1	10.8	29.3	39.1	46.4	34.2	20.3
Color									
White	40.2	26.3	24.5	6.8	24.2	34.4	51.3	44.2	32.6
All other	41.4	25.2	14.2	12.8	27.5	62.3	33.0	29.7	27.2
Region									
Northeast	32.1	22.4	23.0	8.4	24.4	35.3	48.0	35.1	29.1
North Central	43.4	22.7	21.2	9.3	22.7	34.9	47.0	42.3	27.8
South	45.5	29.5	24.7	7.9	24.0	43.3	42.1	41.5	37.2
West	37.7	30.8	24.1	10.6	29.0	35.8	65.7	53.7	32.8
Residence									
Metropolitan	37.5	26.0	24.0	9.3	25.7	37.9	51.2	39.9	30.0
Nonmetropolitan	46.1	26.5	21.7	7.9	22.5	37.8	44.9	47.2	35.6
Family income									
Under \$5,000	46.9	34.1	28.4	11.4	32.5	48.9	59.4	55.4	43.2
\$5,000-\$9,999	40.5	23.6	22.3	8.7	23.3	40.8	50.5	44.0	31.7
\$10,000-\$14,999	38.7	24.4	21.8	8.4	22.5	35.9	47.4	39.3	28.7
\$15,000 and over	35.9	26.8	23.7	8.0	24.3	29.8	42.4	35.8	30.9

¹Includes unknown income.

Source: National Center for Health Statistics: Selected reports from the Health Interview Survey, Vital and Health Statistics, Series 10.

Source: U.S. Public Health Service, Health Resources Administration, Health: United States, 1975. DHEW Pub. No. 76-1232, U.S. Government Printing Office, 1976. p. 481

Table 29

Prevalence of selected chronic conditions reported in health interviews by selected demographic characteristics: Persons 45-64 years, United States

Demographic characteristic	Arthri- tis	Asthma	Chronic bron- chitis	Diabe- tes	Heart condi- tions	Hernia of abdom- inal cavity	Hyper- tension (without heart involve- ment	Ulcer of stom- ach or duode- num	Impair- ment of back or spine (except paraly- sis)	Hearing impair- ments	Vision impair- ments
	(1969)	(1970)	(1970)	(1973)	(1972)	(1968)	(1972)	(1968)	(1971)	(1971)	(1971)
Number per 1,000 persons 45-64 years											
Total ¹	204.2	33.1	35.4	42.6	88.8	28.3	126.7	33.4	68.2	114.1	63.0
Sex											
Male	148.0	29.3	28.5	40.6	97.4	34.0	101.3	45.0	68.2	140.2	73.6
Female	255.3	36.7	41.6	44.4	81.0	23.2	149.6	22.8	68.2	90.5	53.4
Color											
White	202.4	31.9	36.6	39.6	88.4	29.9	119.1	33.5	66.8	116.8	59.1
All other	221.8	44.5	23.5	70.0	91.6	13.3	196.8	32.6	80.7	88.7	99.6
Region											
Northeast	178.9	25.2	34.2	39.6	82.3	29.9	119.1	28.4	64.2	99.7	47.3
North Central	203.6	29.4	30.8	43.5	84.8	23.2	118.0	30.2	60.1	114.4	58.5
South	229.6	42.8	41.7	47.2	96.0	31.3	145.0	43.0	65.4	119.4	80.3
West	200.6	34.1	33.4	37.4	91.7	29.1	119.3	29.1	92.1	125.6	62.7
Residence											
Metropolitan	191.3	30.6	34.3	42.6	86.1	26.8	122.2	30.1	67.6	106.3	58.7
Nonmetropolitan	229.3	38.0	37.5	42.7	93.7	31.1	135.1	39.3	69.3	128.7	70.9
Family income											
Under \$5,000	297.8	53.5	44.2	74.1	139.3	40.5	172.7	45.2	102.8	158.9	114.1
\$5,000-\$9,999	200.3	33.5	38.7	43.8	92.5	26.7	125.4	31.8	67.2	118.1	57.4
\$10,000-\$14,999	163.7	23.7	29.0	37.8	74.3	23.1	121.3	28.3	62.3	107.3	45.9
\$15,000 and over	159.8	22.7	30.3	30.5	66.6		105.3		52.2	85.9	48.9

¹Includes unknown income.

Source: National Center for Health Statistics: Selected reports from the Health Interview Survey, Vital and Health Statistics. Series 10.

Source: U.S. Public Health Service, Health Resources Administration, Health: United States, 1975. DHEW Pub. No. 76-1232, U.S. Government Printing Office, 1976, p. 487

Table 30

Percent distribution of persons by degree of chronic activity limitation according to selected characteristics: United States, 1975

Characteristic	All persons	With no limitation of activity	With limitation, but not in major activity	With limitation in amount or kind of major activity	Unable to carry on major activity
Percent Distribution					
Total	100.0	85.7	3.5	7.4	3.4
Under 15 yrs.	100.0	96.5	1.6	1.7	0.2
15-44 yrs.	100.0	91.4	3.3	4.2	1.1
45-64 yrs.	100.0	76.3	5.0	13.1	5.6
65+ yrs.	100.0	53.3	6.2	23.2	17.2
Sex					
Male	100.0	85.7	3.5	5.5	5.2
Female	100.0	85.7	3.6	9.0	1.7
Race					
White	100.0	85.7	3.7	7.3	3.3
Racial Minority	100.0	85.8	2.6	7.5	4.1
Black only	100.0	85.0	2.6	8.0	4.4
Income					
Under \$3,000	100.0	69.8	5.1	16.1	9.0
\$3,000-4,999	100.0	72.8	4.3	13.6	9.2
5,000-6,999	100.0	79.9	3.9	10.2	6.0
7,000-9,999	100.0	85.5	3.5	7.4	3.6
10,000-14,999	100.0	89.8	3.2	5.3	1.7
15,000-24,999	100.0	91.2	3.1	4.6	1.2
25,000+	100.0	91.4	3.6	4.1	0.9
Race and Income					
White					
Under \$5,000	100.0	69.6	5.1	15.7	9.5
\$5,000-9,999	100.0	82.3	3.9	9.0	4.8
10,000+	100.0	90.5	3.3	4.8	1.4
Racial Minority					
Under \$5,000	100.0	76.7	3.4	12.0	7.9
\$5,000-9,999	100.0	87.1	2.4	6.9	3.6
10,000+	100.0	92.9	1.9	4.2	1.0
Residence ¹					
Within SMSA	100.0	86.4	3.5	7.0	3.1
Large SMSA	100.0	86.6	3.5	6.6	3.2
Core County	100.0	85.8	3.5	7.1	3.6
Fringe County	100.0	88.6	3.5	5.5	2.4
Medium SMSA	100.0	86.0	3.5	7.4	3.1
Other SMSA	100.0	85.8	3.6	7.5	3.1
Non-SMSA Counties	100.0	83.9	3.6	8.4	4.2
Adj. to SMSA	100.0	84.0	3.6	8.3	4.0
Not Adj. to SMSA	100.0	83.6	3.5	8.5	4.3
Region					
Northeast	100.0	85.8	3.5	7.4	3.3
North Central	100.0	86.7	3.4	7.2	2.7
South	100.0	85.3	3.2	7.3	4.1
West	100.0	84.8	4.3	7.5	3.3

¹ See Appendix for definitions of residence terms.

Source: U.S.P.H.S., National Center for Health Statistics, unpublished data, Health Interview Survey

References

1. U.S. Public Health Service, Health Resources Administration; Health; United States, 1975. DHEW Pub. No. 76-1232, U.S. Government Printing Office, 1976.
2. Unpublished 1975 Data from the Health Interview Survey, National Center for Health Statistics.
3. National Center for Health Statistics: Acute conditions incidence and associated disability, United States, July 1974-June 1975. DHEW publication No. (HRA) 77-1541, Ser. 10, No. 114. U.S. Government Printing Office, Washington, D.C., February 1977.
4. Profile of American Health 1973. Public Health Rep. 89: 504-523 November-December 1974.
5. National Center for Health Statistics: Utilization of Short-Stay Hospitals: Annual Summary for the United States, 1975. DHEW Publication No. (HRA) 77-1782. Series 13, No. 31. U.S. Government Printing Office, Washington, D.C., April 1977.
6. Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1975, Vol. 25, No. 11.
7. Preventive Medicine, ed. Duncan W. Clark and Brian MacMahon; Little, Brown and Company, Boston, 1967.
8. Trends in Epidemiology: Application to Health Service Research and Training, ed. Grodan T. Stewart, Charles C. Thomas, Springfield Illinois, 1972.
9. Grant, Murray. Handbook of Community Health. Second Edition, Lea Febiger, Philadelphia, 1975.
10. National Center for Health Statistics: Hypertension and Hypertensive Heart Disease in Adults, United States, 1960-1962. DHEW Publication No. (HRA) 74-1282, Series 11, No. 13. U.S. Government Printing Office, Washington, D.C., November 1973.
11. National Center for Health Statistics: Inpatient Utilization of Short-Stay Hospitals by Diagnosis, United States-1968. DHEW Publication No. (HSM) 73-1763. Series 13, Number 12. U.S. Government Printing Office, Washington, D.C., March 1973.
12. American Cancer Society: Cancer Statistics, 1976. (Herbert Seidman, Edwin Silverberg, Arthur Holleb) Professional Education Publications, 1976.
13. Statistical Bulletin August 1968. "Diabetes and Socioeconomic Level" Metropolitan Life, Vol. 49.
14. National Center for Health Statistics: Characteristics of Persons with Diabetes, United States, July 1964-June 1965. PHS Publication No. 1000, Series 10, No. 40. U.S. Government Printing Office, Washington, D.C., October 1967.
15. National Center for Health Statistics: Prevalence of Chronic Conditions of the Genitourinary, Nervous, Endocrine, Metabolic, and Blood and Blood-Forming Systems and of Other Selected Chronic Conditions, United States—1973. DHEW Publication No. (HRA) 77-1536, Series 10, No. 109. U.S. Government Printing Office, March 1977.
16. "The Health of America's Nonwhite Population, Status Report and Future Plans for Dealing with Diseases More Prevalent or Severe in Nonwhites." Department of Health, Education, and Welfare, National Institutes of Health, Office of Program Planning and Evaluation, November 11, 1971. (Unpublished document).
17. National Center for Health Statistics: The National Ambulatory Medical Care Survey: 1973 Summary, United States, May 1973-April 1974. DHEW Publication No. (HRA) 76-1772. Series 13, No. 21. U.S. Government Printing Office, Washington, D.C., October 1975, Table 16.
18. National Center for Health Statistics: Prevalence of Selected Chronic Respiratory Conditions, United States, 1970. DHEW Publication No. (HRA)

74-1511. Series 10, No. 84. U.S. Government Printing Office, Washington, D.C., September 1973.

19. National Center for Health Statistics: Selected Vital and Health Statistics in Poverty and Nonpoverty Areas of 19 large Cities, United States, 1969-71. DHEW Publication No. (HRA) 76-1904. Series 21, No. 26. U.S. Government Printing Office, Washington, D.C., November 1975.

20. National Center for Health Statistics: Limitation of Activity Due to Chronic Conditions, United States, 1974. DHEW Publication No. (HRA) 77-1537, Series 10, No. 111. U.S. Government Printing Office, Washington, D.C., June 1977.

List of Tables

Table 1 Prevalence of heart conditions reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1972. **110**

Table 2 Number and percent of discharges and average length of stay for patients discharged from short-stay hospitals, by selected first-listed diagnostic categories and color: United States, 1975. **111**

Table 3 Age-adjusted death rates for Diseases of heart, by color and sex: United States, 1950-69. **112**

Table 4 Age-adjusted death rates and percent change for leading chronic disease conditions in the United States, selected years from 1950 to 1975. **113**

Table 5 Prevalence of cerebrovascular disease reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1972. **114**

Table 6 Age-adjusted death rates for Cerebrovascular diseases, by color and sex: United States, 1950-69. **115**

Table 7 Age-adjusted death rates for Arteriosclerosis, by color and sex: United States, 1950-69. **116**

Table 8 Prevalence rates of definite and borderline hypertension for white and Black adults, by age and sex: United States, 1960-62. **117**

Table 9 Prevalence of hypertensive disease, not elsewhere classified, reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1972. **118**

Table 10 Prevalence rates of definite hypertension among white and black persons 18-74 years by age and sex: United States, 1971-74 **119**

Table 11 Number and percent of discharges and average length of stay for inpatients discharged from short-stay hospitals, excluding newborn infants, by color and selected first-listed diagnostic conditions: United States, 1968. **120**

Table 12 Age-adjusted death rates for Malignant neoplasms, including neoplasms of lymphatic and hemotopoietic tissues, by color and sex: United States, 1950-69. **121**

Table 13 Comparison of Incidence Rates for Common Areas in the N.C.I. Surveys of 1947 and 1969 for Selected Sites of Cancer, by Race and Sex. **122**

Table 14 Percent of Cancer Cases Diagnosed in a localized Stage and Five-Year Survival Rates by Race and Sex for all Stages and Localized Stage for Selected Sites, End Results Group, 1955-1964. **123**

Table 15 Comparison of Death Rates for United States, 1950 and 1973, for Selected Sites of Cancer, by Race and Sex. **124**

Table 16 Prevalence of diabetes reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1973. **125**

Table 17 Age-adjusted death rates for diabetes mellitus, by color and sex: United States, 1950-69. **126**

Table 18 Age-adjusted Death Rates, Indians and Alaskan Natives in 24 Reservation States Compared to U.S., Calendar Year 1971. **127**

Table 19 Percent distribution of diabetics, by age at diagnosis of diabetes according to sex and color: United States, July 1964-June 1965. **128**

Table 20 Prevalence of chronic sinisitis and hay fever, without asthma (Includes upper respiratory allergy), reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1970. **129**

Table 21 Prevalence of chronic bronchitis reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1970. **130**

Table 22 Prevalence of asthma, with or without hayfever and hypertrophy of tonsils and adenoids reported in health interviews and number of conditions per 1,000 persons, by age and selected characteristics: United States, 1970. **131**

Table 23 Tuberculosis Morbidity Rates Per 100,000 population for Indians, Alaska Natives, U.S., 1955-1975. **132**

Table 24 Tuberculosis Mortality, Indians and Alaskan Natives in Reservation States and U.S. All Races, Calendar years 1955-1975, Rates per 100,000 population. **133**

Table 25 Age-adjusted Death Rates for Tuberculosis (all forms), by color: United States, 1970-1975. **133**

Table 26 Death rates for tuberculosis, by poverty status of area of residence and race for 19 selected cities: United States, 1969-71, Average. **134**

Table 27 Age-adjusted death rates for Bronchitis, emphysema, and asthma, by color and sex: United States, 1950-69. **135**

Table 28 Prevalence of selected chronic conditions reported in health interviews by selected demographic characteristics: Persons 17-44 years, United States. **136**

Table 29 Prevalence of selected chronic conditions reported in health interviews by selected demographic characteristics: Persons 45-64 years, United States. **137**

Table 30 Percent distribution of persons by degree of chronic activity limitation according to selected characteristics; United States, 1975. **138**

List of Figures

Figure 1 Percent of adults with definite hypertension, by age, race, and sex. **102**

Figure 2 Prevalence rates of definite hypertension among white and black persons, 17-74 years of age, U.S. 1971-74 **103**

Figure 3 Prevalence of Selected chronic conditions reported in health interviews per 1,000 persons, by color, 1973 **106**

Figure 4 Prevalence of Selected chronic conditions reported in health interviews per 1,000 persons, by family income, 1973 **107**

Chapter VII

Accidents and Injuries

Contents

A. Overview	145
B. Introduction	145
C. Frequency and Rate of Injury	146
D. Disability	147
E. Mortality	147
References	159
List of Tables	160

Chapter VII

Accidents and Injuries

A. Overview

In this chapter, the occurrence of injuries due to accidents of the disadvantaged are compared to their occurrence in the remainder of the population. The frequency and rate of injuries due to accidents, as well as resulting disability and mortality, are discussed. Available data on accidents and resulting injury associated with disadvantagedness are limited. Those important differences that emerged from the data that are available, however, are noted in the following analysis.

In a comparison of injury rates, due to accidents for the white and nonwhite populations, a lower rate of personal injury, 191.1 per 1000 population, was found among nonwhites when compared with the rate of personal injury among the white population, 261.1 per 1000 population. The rate of injuries occurring in the home is, also, lower for nonwhites compared with whites, while little racial difference is seen in the rates of injuries due to motor vehicle and work accidents. The lower injury rates observed among the disadvantaged could be attributable to the following:

- 1) only injuries which require medical attention are included, which may exclude more injuries among the disadvantaged, who in general, for a number of reasons, are low utilizers of the health care system, when compared with the advantaged; and
- 2) any differences in interpretation of what constitutes an injury, i.e., the disadvantaged may only report injuries of a very severe nature.

In measuring the impact of injury due to accidents, the reliability of the data available is, also, limited for several

reasons. The first is the criterion mentioned earlier of medical attendance for classifying injury. The second is the varied interpretation of restriction in daily activities by the different population groups. In addition, the restriction of daily activities, or bed disability, may vary, depending on the nature of a person's work, or other usual daily activities. Salient findings from studies of disability due to injury are described below.

Low income persons had over twice the number of days of restricted activity per 100 persons compared with high income persons. Restricted activity days were inversely related to education: that is, the higher the educational level, the lower the number of reported restricted activity days. Number of bed disability days per 100 persons varied among income groups. Low income persons had over three times the number of bed disability days, per 100 persons, as high income persons. Days lost from work per 100 employed persons followed the same pattern as bed disability days, when income and education groups were compared.

The accident mortality rate for the nonwhite population was 32 percent higher than that of the white population. In comparing the mortality statistics by type of accidents, the rate of mortality, due to motor vehicle and due to all "other" classes of accidents, was, also, higher in the nonwhite population when compared with the white population.

In summary, from the available data, it appears that disparities exist between the disadvantaged populations relative to injuries due to accidents. While the *rate of injury* appears to be lower among nonwhites and low income persons, compared with whites

and high income persons, the *impact* of injuries, as measured both by various degrees of activity restriction and by mortality, is greater for nonwhites and low income persons than it is for whites and high income persons. The impact on life style, resulting from any economic loss incurred, as a result of injury due to accidents among the disadvantaged, warrants further investigation.

B. Introduction

The problem addressed by this chapter is whether a difference exists in the occurrence of injuries due to accidents between the advantaged and disadvantaged segments of the population. The specific topics treated are the frequency and rate of injuries, the degree of resulting disability, and the mortality rates due to injury. The extent of disability has been determined by the restriction of daily activities, bed disability days, or loss of work-days attributed to injury. Factors thought to be associated with the occurrence of injuries in the nonwhite, low-income, and lowest educated segments of the population, when compared to the total population, are discussed.

The number and type of comparisons that can be made between the advantaged and disadvantaged are limited, due to lack of data. The data which are available in this health problem area are not always disaggregated by race, income, or educational level. The data presented in this chapter are derived from household surveys, conducted by the National Center for Health Statistics in the time periods of July 1959-June 1961, July 1965-June 1967, and 1971-72. An additional limitation of these data are the criteria used to classify injuries. One criterion for inclusion is that only injuries requiring medical attention, or causing a

reduction of usual activities for one day, are counted. Due to the lower utilization of health care services by the disadvantaged, the social and cultural variables associated with the interpretation of injury, and the reduction of daily activities, a bias is associated with using these data as estimates of the actual rates of the occurrence of injury.

A potentially outstanding source of accident and injury data is the National Electronic Injury Surveillance System, run by the Consumer Product Safety Commission. They do not, however, disaggregate their data by any demographic variables that allow the types of analyses desired here, and, thus, no such data from this rich source have been included in this chapter.

C. Frequency and Rate of Injury

There can be varied interpretations of accidents and resulting impairment due to injury. The data presented are within the framework of criteria used by the National Center for Health Statistics, in investigating the occurrence of accidents and resulting injury, and, thus, include only injuries meeting their criteria rather than total injuries. The information contained in these studies was derived from household interviews conducted by the Health Interview Survey, in a probability sample of the civilian, non-institutional, population of the United States. The survey instrument defined an injury as those conditions for which medical attention is sought, or has caused restriction of daily activity for at least one day. The following data represent number of injuries, *not* number of persons injured. One person may incur more than one injury in a single accident. In addition, each condition for which a physician was consulted was counted separately, as medically attended, rather than counting the number of persons attended. These factors, as well as the socio-economic bias introduced by the criteria used for classification of injury, must be considered in interpretation of the following statistics. That is, fewer persons at lower socio-economic levels

are likely to meet the criteria of obtaining medical attention because of lower health service utilization by this group. In addition, the disadvantaged may be less able to interrupt usual activities due to injury, because of pay loss.

Data on persons injured during July 1965-June 1967 indicate that the rate of injury was appreciably higher among males than among females, 309.4 persons injured per 1000 population for males, compared with 200.5 for females (See Table 1). The number of nonwhite persons injured per 1000 persons per year, 191.1 was lower than the rate for whites 261.1. This racial differential may be due, in part, to lower utilization of health care facilities of nonwhites. It should be noted that there is little difference between the rate of injury due to motor vehicle and work accidents for whites and nonwhites, where access to medical care is most readily available (Table 2). By contrast, in the home where differential utilization patterns are more likely to come into play, the rate is lower for nonwhites, 85.4 per 1000 population versus 109.4. Data from the 1971-72 study are not disaggregated by race, so a comparison of trends is not possible at this time.

In both the 1965-67 and 1971-72 studies, the rates of persons injured were somewhat different by place of residence. Residents of standard metropolitan statistical areas, SMSA's, in both the 1965-67 and 1971-72 time periods, had higher rates than persons residing in areas outside SMSA's (See Tables 1 and 3). Rates for each class of accident appear to follow a general pattern of lower rates in areas of lower population density, except for the "while at work" category. Perhaps, the high accident rate of farmers using machinery is responsible for this difference. Finer breakdowns of data by specific cause indicate that this is a likely explanation (1, p. 15). The incidence of persons injured during the 1971-72 time period showed a 9 percent higher rate among persons living in an SMSA compared with persons living outside an SMSA, 321.4

per 1000 persons versus 294.9 (See Table 1). Again these data are not disaggregated by race.

While the 1965-67 data reveal no clear cut relationship between income and injury rates (See Table 1), the 1971-72 data do indicate differential rates by income. Table 3 demonstrates that the average number of persons injured per 1000 persons was higher for the two higher family income groups, 336.8 and 333.9, than it was for the two lower family income groups, 298.9 and 293.9. The same pattern appears in injury rates for motor vehicle accidents, but not for work and home accidents. As mentioned earlier, the comparatively low rate of injury, among persons with lower incomes, could be attributed to the criterion of required medical attendance used for inclusion of injuries in the estimates.

Frequencies and rate for each class of accident during 1965-67 are also distributed by education level in Table 1. The low rate of injury among persons with less than nine years of education could be due to the inclusion of a high proportion of persons aged 65 and older in this education group. The lower rate of injury among persons with more than 16 years of education, 187.1, compared with those with 9-11 years of education, 294.6, is not surprising, as the persons in the 9-11 educational bracket would tend to have more hazardous jobs than persons at higher educational levels. The education differential is even more striking among the males only category, as opposed to the both sexes category (See Table 1).

The generally lower injury rates observed among the disadvantaged population could derive from the following:

- 1) The definition of injury utilized by the NCHS;
- 2) Lower utilization of health care services by the disadvantaged; and
- 3) A less concerned attitude by the poor over the occurrence of minor accidents.

Thus, for the above reasons, the

reported findings, indicating differences between the advantaged and disadvantaged populations are not conclusive.

Data collected in a Health Interview Survey during the two year period, July 1959-June 1961 (See Table 4), showed that approximately 38 percent of all impairments in the civilian non-institutionalized population were due to injury (2). Of this total, about 1 out of every 3 impairments, due to injury, resulted from an accident at work, and approximately 1 out of every 6 resulted from a moving motor vehicle accident (2). This would increase the probability of impairment due to injury in the disadvantaged population, as the frequency of injury is higher in these categories for the lower income—nonwhite population. The proportion of impairments attributed to accidents in the home was lower, with 28 percent of the total impairments due to injury.

D. Disability

Time lost from work or school and an injury confining a person to bed, both in and outside of a hospital, are measures of the impact of injury due to accidents. The disability data discussed below are, again, based on studies conducted by NCHS in the time periods 1965-1967 and 1971-1972. Additional data were obtained from the NCHS publications, "Work Injuries Among Blue Collar Workers, U.S. July 1966-June 1967" (3), and "Time Lost From Work Among the Currently Employed Population, U.S. 1968" (4). The reliability of the data of all the studies is limited in measuring the impact of injuries in the individual, as restriction of activities or bed disability, may vary, depending on the nature of the person's work or other usual activities. During the time period of July 1965-June 1967, of the 86.3 percent of all injuries that were medically attended, 39.7 percent were accompanied with restricted activity, and 46.6 percent were not (5, p. 8). Fourteen percent of all injuries result in some restriction of normal activity, while 21.8 percent resulted in bed disability, and 3.9 per-

cent required hospitalization (5, p. 8). In the 1971-72 survey, the percentage of medically attended injuries, resulting in restriction of activity, 42.7 percent was slightly higher than the percentage reported in 1965-67 (1, p. 22). Time trends in overall injury rates have been attempted in various NCHS publications. This type of analysis will not be repeated here for the following reason. A considerable amount of yearly variation in rates was observed by NCHS, part of which was due to changes in data collection methods in the comparison periods, and part of which was unexplained (1, p. 5). Instead, our attention will be directed to a comparison of the advantaged and disadvantaged, using the more recent survey period, 1971-1972. While data were not disaggregated by race in 1971-72, income and education breakdowns are available.

In Table 5, the number of days of restricted activity, per 100 persons per year, is seen to be over twice as great for low-income persons, 460.6 days, as they were for high-income persons, 193.4 days. Restricted activity days decreased as the years of education increased. Persons with less than 12 years of education reported 472.5 days of restricted activity per 100 persons, compared with the 272.9 days reported by persons with 12 years or more education.

An even larger income differential is observed in bed disabilities. Individuals from families whose income was \$15,000 or more had less than one third the number of bed disability days per 100 persons, 43.6 days, as did persons from families whose income was less than \$5,000, 152.2 days (See Table 6). A substantial education differential was observed between individuals with 12 years or more education, 79.9 bed disability days per 100 persons, as compared with individuals with less than 12 years education, 135.6 bed disability days per 100 persons. The direction of the differential is repeated when days lost from work are compared between income and education groups (See Table 7).

E. Mortality

The last index of health status to be considered in this chapter is mortality due to accidents. Data were obtained from studies performed by NCHS presenting age adjusted death rates for accidents in the United States for the years 1950 through 1969 (6), disaggregated by color and sex. The tables were updated to 1975, using data from the Monthly Vital Statistics, (final mortality statistics reports (7)).

Accidents were the fourth leading cause of death in 1975, after heart disease, cancer, and stroke (7). The mortality rate from accidents, (motor vehicle and other accidents taken together, fell during 1950-1975, from 57.5 deaths per 100,000 in 1950 to 44.8 deaths per 100,000 in 1975 (See Table 8). A similar decrease is seen in the rate of mortality for males, which decreased from 83.7 deaths per 100,000 population in 1950 to 67.7 deaths in 1975, most of the decrease occurring between 1969 and 1975. The female rate of mortality fluctuated, slightly, but a steady decline is noted from 1950-1975. This trend for the total age adjusted death rate reflects similar patterns for the four color/sex groups, except that the increase for the nonwhite male population between 1960 and 1970 was greater than the increase in the white male population.

For both sexes combined, the accident mortality rate for the nonwhite population was 32 percent higher than that for the white population. Also for 1975, the most recent year for which data are available, there were 43.1 deaths per 100,000 white population compared with 56.9 per 100,000 nonwhite population. The racial differential in 1975, 1.32, did not differ greatly from the differential in 1950, 1.29. Varying increases in the differential had occurred in the intervening years, however, reaching 1.43 in 1970, for instance.

Mortality statistics for motor vehicles accidents, in contrast to total accidents, showed a slight decline in the mortality rate from 1950 to 1962,

followed by a rise from 1962 to 1973 (See Table 9). A sharp decline in motor vehicle accident mortality occurred between 1973 and 1974, probably as a result of the mandatory reduction in speed as an energy saving device. Nonwhites had a consistent, but not substantially higher, mortality rate from this cause, with a differential of 1.06 in 1975. Males had three times the mortality rate from this cause than did females, 32.2 versus 10.8. Nonwhite males had three and a half times the mortality rate of nonwhite females.

All other deaths due to accidents are

included in an "all other accidents" category. The five major causes included in this category are listed as accidental falls, accidents caused by fire and flames, accidental drowning and submersion, accidental poisoning, and inhalation and ingestion of food, or other objects causing suffocation (6). A similar decline is, also, observed in this category, in that the rate of mortality declined from 34.2 deaths per 100,000 in 1950 to 23.5 deaths per 100,000 in 1975 (See Table 10). The nonwhite population had consistently higher mortality rates from this cause of death in 1975: 34.4 deaths from "all

other accidents" per 100,000 population occurred in the nonwhite population compared with 21.9 deaths in the white population.

It is apparent from this analysis that the rate of mortality from accidents is greater in the nonwhite population. This differs from the higher injury rate among whites compared with nonwhites, and the high income compared to low income persons. On the other hand, higher income persons had fewer restricted activity, bed disability, and work loss days, compared to lower income persons.

Table 1

Average annual number of persons injured¹ and number of persons injured per 1,000 persons per year, by sex and demographic characteristics: United States, July 1965-June 1967

Characteristic	Both sexes	Male	Female	Both sexes	Male	Female
	Average number of persons injured in thousands			Number of persons injured per 1,000 persons per year		
Total	48,483	28,642	19,841	253.1	309.4	200.5
Residence						
SMSA's	31,962	18,526	13,436	259.5	312.6	210.2
Outside SMSA's:						
Nonfarm	14,011	8,546	5,466	243.0	307.1	183.3
Farm	2,510	1,571	939	234.4	287.2	179.3
Geographic region						
Northeast	11,442	6,417	5,025	239.4	279.7	202.1
North Central	13,089	7,757	5,332	244.8	298.5	194.0
South	15,688	9,322	6,365	267.0	329.6	208.8
West	8,265	5,146	3,119	262.4	335.1	193.2
Family income						
Under \$3,000	6,541	3,227	3,315	222.4	252.9	199.1
\$3,000-\$4,999	8,194	4,634	3,560	263.1	312.7	218.1
\$5,000-\$6,999	9,546	5,869	3,677	255.6	319.5	193.8
\$7,000-\$9,999	10,973	6,855	4,118	261.3	326.2	196.2
\$10,000+	11,521	7,042	4,479	264.2	321.9	206.0
Color						
White	44,098	25,870	18,228	261.6	316.9	209.6
Nonwhite	4,385	2,772	1,613	191.1	253.6	134.2
Marital status, 17+ years						
Married	20,171	12,543	7,629	229.7	288.1	172.3
Widowed	1,848	*	1,610	179.4	*	191.0
Divorced	924	276	647	259.9	212.0	287.2
Separated	783	254	528	322.4	292.3	338.5
Never married	5,584	3,350	2,234	63.9	74.5	52.6
Education of individual, 17+ years						
Under 9 years	7,042	4,206	2,836	214.2	258.4	170.9
9-11 years	7,689	4,521	3,167	294.6	375.0	225.5
12 years	8,955	4,934	4,021	222.7	302.9	168.1
13-15 years	3,144	1,577	1,567	239.9	241.3	238.5
16+ years	1,990	1,099	891	187.1	172.8	208.3

[Data are based on household interviews of the civilian, noninstitutional population.

¹Includes only persons with injuries involving 1 or more days of restricted activity or medical attention.

²Includes unknown income and education.

Source: Department of Health, Education, and Welfare, Vital & Health Statistics, "Persons Injured and Disability Days Due to Injury, U.S.—July 1965-June 1967," Public Health Service Publication No. 1000, Series 10, No. 58. U.S. Government Printing Office, Washington, D.C., March 1970.

Table 2

Average annual number of persons injured¹ and number of persons injured per 1,000 persons per year, by sex, color, and class of accident: United States, July 1965-June 1967

Sex and color	Class of accident					
	All classes	Moving motor vehicle	Traffic	While at work	Home	Other
		Total				
Both sexes	Average number of persons injured in thousands					
Total	48,483	3,735	3,481	9,840	20,406	16,714
White	44,098	3,317	3,088	8,631	18,447	15,615
Nonwhite	4,385	419	393	1,209	1,960	1,098
Male						
Total	28,642	1,848	1,689	8,574	9,736	10,330
White	25,870	1,614	1,481	7,554	8,732	9,555
Nonwhite	2,772	*	*	1,020	1,004	775
Female						
Total	19,841	1,888	1,792	1,266	10,670	6,384
White	18,228	1,703	1,607	1,077	9,714	6,060
Nonwhite	1,613	*	*	*	956	324
Both sexes	Number of persons injured per 1,000 persons per year					
Total	253.1	19.5	18.2	51.4	106.5	87.3
White	261.6	19.7	18.3	51.2	109.4	92.6
Nonwhite	191.1	18.3	17.1	52.7	85.4	47.9
Male						
Total	309.4	20.0	18.2	92.6	105.2	111.6
White	316.9	19.8	18.1	92.5	107.0	117.0
Nonwhite	253.6	*	*	93.3	91.9	70.9
Female						
Total	200.5	19.1	18.1	12.8	107.8	64.5
White	209.6	19.6	18.5	12.4	111.7	69.7
Nonwhite	134.2	*	*	*	79.6	27.0

[Data are based on household interviews of the civilian, noninstitutional population.

¹Includes only persons with injuries involving 1 or more days of restricted activity or medical attention.

NOTE: The sum of the data for the classes of accidents may be greater than the total because the classes are not mutually exclusive.

Source: Department of Health, Education, and Welfare, Vital & Health Statistics, "Persons Injured and Disability Days Due to Injury, U.S.—July 1965-June 1967", Public Health Service Publication No. 1000, Series 10, No. 58. U.S. Government Printing Office, Washington, D.C., March 1970.

Table 3

Average annual number of persons injured and number of persons injured per 1,000 persons per year, by class of accident and selected characteristics: United States, 1971-72

Characteristic	All classes	Moving motor vehicle		While at work	Home	Other
		Total	Traffic			
Average annual number of persons injured in thousands ¹						
All persons ²	63,400	4,722	3,903	8,785	24,012	27,807
Place of residence						
All SMSA	41,935	3,163	2,751	5,381	16,001	18,633
Outside SMSA	21,465	1,559	1,152	3,404	8,011	9,174
Geographic region						
Northeast	13,158	821	685	1,691	5,049	5,972
North Central	18,297	1,350	1,125	2,629	6,785	8,164
South	19,004	1,464	1,259	2,644	7,360	8,010
West	12,941	1,087	834	1,820	4,817	5,662
Family income						
Less than \$5,000	12,226	831	795	1,279	4,933	5,551
\$5,000-\$9,999	18,154	1,151	929	3,218	7,043	7,242
\$10,000-\$14,999	16,801	1,541	1,281	2,467	6,466	6,871
\$15,000 or more	12,782	871	643	1,338	4,428	6,603
Education of individual-17 years and over						
Less than 12 years	13,809	1,127	1,014	3,433	4,862	4,894
12 years or more	23,388	2,546	2,068	5,309	6,934	9,665
Number of persons injured per 1,000 persons per year						
All persons ²	311.9	23.2	19.2	43.2	118.1	136.8
Place of residence						
All SMSA	321.4	24.2	21.1	41.2	122.6	142.8
Outside SMSA	294.9	21.4	15.8	46.8	110.1	126.0
Geographic region						
Northeast	273.0	17.0	14.2	35.1	104.8	123.9
North Central	326.4	24.1	20.1	46.9	121.1	145.7
South	299.3	23.1	19.8	41.6	115.9	126.1
West	364.4	30.6	23.5	51.3	135.7	159.5
Family income						
Less than \$5,000	298.9	20.3	19.4	31.3	120.6	135.7
\$5,000-\$9,999	293.9	18.6	15.0	52.1	114.0	117.3
\$10,000-\$14,999	336.8	30.9	25.7	49.5	129.6	137.7
\$15,000 or more	333.9	22.8	16.8	34.9	115.7	172.5
Education of individual-17 years and over						
Less than 12 years	254.2	20.7	18.7	63.2	89.5	90.1
12 years or more	289.7	31.5	25.6	65.8	85.9	119.7

[Data are based on household interviews of the civilian, noninstitutionalized population.

²Includes unknown income and education.

NOTE: The sum of the data for the classes of accidents may be greater than the total because the classes are not mutually exclusive.

NOTE: Relative standard errors of estimates for this table are found on chart on page 38.

When a figure is shown with an asterisk in front of it, it is presented only for the purpose of combining with other cells. An estimate will have a relative standard error less than 30 percent when the aggregate is at least 350,000.

Source: Department of Health, Education, and Welfare, Vital & Health Statistics, "Persons Injured and Disability Days by Detailed Type and Class of Accident, U.S. 1971-1972", DHEW Publication No. (HRA) 76-1532, Series 10, No. 105. U.S. Government Printing Office, Washington, D.C., January 1976.

Table 4

Average prevalence of impairments due to injury, and number and percent of impairments due to injury in the home, while at work, or in moving motor-vehicle accidents, by type of impairment: United States, July 1959-June 1961

Type of impairment	Average number of impairments due to injury in thousands	Due to injury					
		In the home		While at work		In moving motor vehicles	
		Number in thousands	Percent	Number in thousands	Percent	Number in thousands	Percent
All impairments	10,670	2,989	28.0	3,516	33.0	1,646	15.4
Visual impairments	570	231	40.5	160	28.1	55	9.6
Hearing impairments	452	124	27.4	75	16.6	45	10.0
Paralysis, complete or partial	138	28	20.3	32	23.2	36	26.1
Absence of fingers or toes	1,492	395	26.5	833	55.8	39	2.6
Absence of major extremities	196	28	14.3	78	39.8	29	14.8
Impairments, ¹ back or spine	2,287	531	23.2	811	35.5	518	22.6
Impairments, ¹ upper extremity and shoulder	1,700	582	34.2	538	31.6	189	11.1
Impairments, ¹ lower extremity and hip	2,991	856	28.6	733	24.5	539	18.0
Other and multiple impairments ¹ of limbs, back, and trunk	540	130	24.1	171	31.7	143	26.5
All other impairments	304	84	27.6	85	28.0	53	17.4

[Data are based on household interviews of the civilian, noninstitutional population.

¹Except paralysis or absence.

Source: Department of Health Education, and Welfare, Vital & Health Statistics, "Impairments Due to Injury by class and type of accident, U.S.—July 1959-June 1961", Public Health Service Publication No. 1000, Series 10, No. 6. U.S. Government Printing Office, Washington, D.C., January 1964.

Table 5

Average annual number of days of restricted activity due to injury and number of days per 100 persons per year, by age and selected characteristics: United States, 1971-72

Characteristics	All ages	Under 17 years	17-44 years	45-64 years	65 years and over
Average number of days of restricted activity in thousands					
All persons ¹	557,527	73,092	207,718	175,890	100,826
Sex					
Male	283,421	43,639	125,467	80,946	33,369
Female	274,106	29,453	82,251	94,944	67,457
Place of residence					
All SMSA	362,945	48,643	138,828	114,114	61,361
Outside SMSA	194,582	24,450	68,891	61,776	39,465
Geographic region					
Northeast	120,916	14,118	43,999	40,329	22,470
North Central	155,124	20,994	54,114	49,578	30,437
South	176,058	21,151	66,433	54,638	33,836
West	105,430	16,829	43,173	31,344	14,084
Family income					
Less than \$5,000	188,370	11,676	51,239	59,132	66,322
\$5,000-\$9,999	156,885	22,069	66,452	52,998	15,366
\$10,000-\$14,999	98,774	18,721	46,160	26,244	7,649
\$15,000 or more	74,049	16,532	31,134	22,919	3,465
Education of individual-17 years and over					
Less than 12 years	256,723	...	83,849	102,455	70,418
12 years or more	220,371	...	121,881	71,564	26,926
Number of days of restricted activity per 100 persons per year					
All persons ¹	274.3	111.2	273.6	418.8	513.4
Sex					
Male	289.1	130.4	344.9	406.0	404.7
Female	260.5	91.3	208.1	430.4	592.2
Place of residence					
All SMSA	278.2	117.4	278.8	417.4	515.6
Outside SMSA	267.3	100.7	263.7	421.5	510.1
Geographic region					
Northeast	250.9	95.8	250.1	373.9	442.8
North Central	276.8	113.0	260.7	441.2	555.3
South	277.2	102.0	277.5	428.1	557.8
West	296.9	144.5	316.7	434.7	466.8
Family income					
Less than \$5,000	460.6	109.7	426.0	780.3	622.3
\$5,000-\$9,999	254.0	105.1	276.6	433.0	341.5
\$10,000-\$14,999	198.0	103.3	224.4	271.3	502.9
\$15,000 or more	193.4	135.6	203.7	243.6	247.7
Education of individual-17 years and over					
Less than 12 years	472.5	...	376.9	539.3	538.0
12 years or more	272.9	...	232.2	320.2	457.2

[Data are based on household interviews of the civilian, noninstitutionalized population.

¹Includes unknown income and education.

NOTE: Relative standard errors of estimates for this table are found on chart on page 39.

When a figure is shown with an asterisk in front of it, it is presented only for the purpose of combining with other cells. An estimate will have a relative standard error less than 30 percent when the aggregate is at least 3,200,000.

Source: Department of Health, Education, and Welfare, Vital & Health Statistics, "Persons Injured and Disability Days by Detailed Type and Class of Accident," U.S. 1971-1972", DHEW Publication No. (HRA) 76-1532, Series 10, No. 105. U.S. Government Printing Office, Washington, D.C., January 1976.

Table 6

Average annual number of days of bed disability due to injury and number of days of bed disability per 100 persons per year, by age and selected characteristics: United States, 1971-72

Characteristics	All ages	Under 17 years	17-44 years	45-64 years	65 years and over
Average number of days of bed disability in thousands					
All persons ¹	158,610	17,334	58,586	48,971	33,719
Sex					
Male	73,674	11,405	31,112	18,448	12,708
Female	84,936	5,928	27,473	30,523	21,011
Place of residence					
All SMSA	102,751	12,627	39,003	31,434	19,686
Outside SMSA	55,859	4,707	19,583	17,537	14,033
Geographic region					
Northeast	34,233	*3,055	11,684	11,610	7,884
North Central	43,058	5,667	15,603	10,951	10,837
South	53,924	5,196	19,958	16,552	12,216
West	27,396	3,415	11,340	9,858	*2,783
Family income					
Less than \$5,000	62,238	3,459	15,254	20,860	22,665
\$5,000-\$9,999	43,173	4,958	20,722	13,723	3,771
\$10,000-\$14,999	23,456	4,309	10,768	6,119	*2,261
\$15,000 or more	16,691	3,200	6,521	5,286	*1,684
Education of individuals-17 years and over					
Less than 12 years	73,675	...	23,933	26,728	23,014
12 years or more	64,475	...	34,165	21,612	8,698
Number of days of bed disability per 100 persons per year					
All persons ¹	78.0	26.4	77.2	116.6	171.7
Sex					
Male	75.2	34.1	85.5	92.5	154.1
Female	80.7	18.4	69.5	138.4	184.5
Place of residence					
All SMSA	78.8	30.5	78.3	115.0	165.4
Outside SMSA	76.7	19.4	75.0	119.7	181.4
Geographic region					
Northeast	71.0	*20.7	66.4	107.6	155.4
North Central	76.8	30.5	75.2	97.5	197.7
South	84.9	25.1	83.4	129.7	201.4
West	77.2	29.3	83.2	136.7	*92.2
Family income					
Less than \$5,000	152.2	32.5	126.8	275.3	212.7
\$5,000-\$9,999	69.9	23.6	86.3	112.1	83.8
\$10,000-\$14,999	47.0	23.8	52.3	63.3	*148.7
\$15,000 or more	43.6	26.3	42.7	56.2	*120.4
Education of individual-17 years and over					
Less than 12 years	135.6	...	107.6	140.7	175.8
12 years or more	79.9	...	65.1	96.7	147.7

[Data are based on household interviews of the civilian, noninstitutionalized population.

¹Includes unknown income and education.

NOTE: Relative standard errors of estimates for this table are found on chart on page 39.

When a figure is shown with an asterisk in front of it, it is presented only for the purpose of combining with other cells. An estimate will have a relative standard error less than 30 percent when the aggregate is at least 3,200,000.

Source: Department of Health, Education, and Welfare, Vital & Health Statistics, "Persons Injured and Disability Days by Detailed Type and Class of Accident, U.S. 1971-1972", DHEW Publication No. (HRA) 76-1532, Series 10, No. 105. U.S. Government Printing Office, Washington, D.C., January 1976.

Table 7

Average annual number of days lost from work or school due to injury and number of days lost per 100 currently employed persons or children 6-16 years per year, by age and selected characteristics: United States, 1971-72

Characteristic	Days Lost from work				Days lost from school
	All ages-17 years and over	17-44 years	45-64 years	65 years and over	
	Average number of days lost from work in thousands				Number of days in thousands
All persons ¹	86,139	51,564	31,814	2,761	15,116
Sex					
Male	61,865	38,709	21,267	*1,888	8,917
Female	24,274	12,855	10,547	*873	6,200
Place of residence					
All SMSA	54,637	31,549	21,882	*1,206	10,393
Outside SMSA	31,502	20,015	9,932	*1,555	4,723
Geographic region					
Northeast	22,250	12,872	8,769	*610	3,237
North Central	25,939	14,209	10,186	*1,544	4,493
South	26,552	17,777	8,167	*608	4,612
West	11,397	6,706	4,691	*—	2,775
Family income					
Less than \$5,000	16,529	10,680	4,549	*1,300	3,686
\$5,000-\$9,999	31,089	19,104	11,505	*481	4,462
\$10,000-\$14,999	18,722	11,610	6,999	*113	3,939
\$15,000 or more	13,778	7,629	5,653	*496	2,174
Education of individual-17 years and over					
Less than 12 years	37,712	19,305	16,898	*1,509	...
12 years or more	47,714	31,984	14,477	*1,252	...
	Days lost from work per 100 currently employed persons per year				Days lost from school per 100 children 6-16 years per year
All persons ¹	109.3	105.9	117.8	88.5	33.9
Sex					
Male	126.5	128.9	126.5	*91.8	39.2
Female	81.1	68.8	103.6	*82.0	28.3
Place of residence					
All SMSA	105.9	98.4	123.3	*67.6	37.0
Outside SMSA	115.6	120.1	107.4	*116.6	28.5
Geographic region					
Northeast	116.8	115.3	123.8	*75.9	32.1
North Central	119.9	105.9	139.0	*174.1	35.5
South	106.9	113.0	101.3	*58.6	32.9
West	85.7	80.0	103.7	*—	35.2
Family income					
Less than \$5,000	155.2	176.7	137.4	*100.5	55.7
\$5,000-\$9,999	128.6	123.8	146.0	*56.1	33.2
\$10,000-\$14,999	87.4	82.2	100.3	*35.3	31.5
\$15,000 or more	76.6	71.4	81.4	*135.9	23.1
Education of individual-17 years and over					
Less than 12 years	149.3	157.1	151.5	*83.1	...
12 years or more	90.2	88.5	93.2	*102.5	...

[Data are based on household interviews of the civilian, noninstitutionalized population.

¹Includes unknown income and education.

NOTE: Relative standard errors of estimates for this table are found on chart on page 39.

When a figure is shown with an asterisk in front of it, it is presented only for the purpose of combining with other cells. An estimate will have a relative standard error less than 30 percent when the aggregate is at least 1,900,000.

Source: Department of Health, Education, and Welfare, Vital & Health Statistics, "Persons Injured and Disability Days by Detailed Type and Class of Accident, U.S. 1971-1972", DHEW Publication No. (HRA) 76-1532, Series 10, No. 105. U.S. Government Printing Office, Washington, D.C., January 1976.

Table 8

Age-adjusted death rates for Accidents, by color and sex: United States, 1950-69

Year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
1975	44.8	67.7	23.1	43.1	64.8	22.4	56.9	90.7	27.6
1974	46.0	69.4	23.8	44.3	66.6	22.9	58.5	92.3	29.0
1973	51.7	77.4	27.4	49.5	73.6	26.4	67.5	106.8	33.2
1972	52.0	77.5	28.0	49.8	73.5	27.2	68.8	109.3	33.4
1971	52.0	77.1	28.2	49.4	72.9	27.0	71.6	111.7	36.1
1970	53.7	80.7	28.2	51.0	76.2	27.2	72.8	115.7	35.1
1969	55.3	82.9	29.3	52.6	78.5	28.1	75.5	118.9	36.9
1968	55.1	82.5	29.2	52.2	77.7	28.1	77.0	122.1	36.8
1967	54.8	81.8	29.3	52.4	77.8	28.2	73.2	114.7	35.9
1966	55.6	82.6	30.0	53.0	78.5	28.7	75.8	116.4	39.1
1965	53.4	79.1	28.8	51.0	75.4	27.7	70.8	109.3	35.8
1964	52.1	76.8	28.3	49.9	73.4	27.3	68.4	105.2	34.9
1963 ¹	50.9	75.0	27.8	49.1	72.4	26.7	68.2	103.4	36.1
1962 ¹	49.7	73.2	27.2	48.0	70.7	26.2	66.5	100.5	35.4
1961	48.1	71.4	25.8	46.1	68.5	24.5	63.2	95.1	33.9
1960	49.9	73.9	26.8	47.6	70.6	25.4	67.3	101.1	36.1
1959	49.8	74.3	26.3	47.7	71.2	25.1	66.1	100.2	34.6
1958	49.8	74.1	26.5	47.7	71.1	25.1	66.6	100.2	35.8
1957	53.4	79.3	28.5	51.2	76.1	27.0	71.0	106.5	38.4
1956	54.4	81.2	28.7	52.2	77.8	27.4	72.0	109.7	37.3
1955	54.4	80.7	29.0	52.3	77.7	27.6	71.2	106.5	38.5
1954	53.1	78.9	28.4	51.1	75.9	27.1	69.7	104.6	37.8
1953	57.3	85.3	30.5	54.9	81.8	29.1	76.4	116.2	39.8
1952	58.8	86.8	32.0	56.4	83.2	30.6	78.4	118.2	41.6
1951	59.4	87.5	32.0	57.3	84.5	30.7	76.4	114.1	41.0
1950 ²	57.5	83.7	31.7	55.6	81.0	30.6	72.0	107.1	38.8

[For 1968 and 1969 rates are based on deaths assigned to category numbers E800-E949 of the *Eighth Revision of the International Classification of Diseases, Adapted for Use in the United States*, adopted in 1965; for 1950-67 rates are based on deaths assigned to category numbers E800-E962 of the Sixth and Seventh Revisions adopted, respectively, in 1948 and 1955. For method of age adjustment, see appendix I]

Source: Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, Maryland, Series 20, No. 16, Table K, p. 30.

Table 9

Age-adjusted death rates for Motor vehicle accidents, by color and sex: United States, 1950-69

Year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
1975	21.3	32.2	10.8	21.2	31.7	10.9	22.5	36.6	10.2
1974	21.8	33.2	10.9	21.7	32.8	11.0	23.2	37.5	10.8
1973	26.4	39.3	14.0	26.0	38.4	14.0	30.0	47.8	14.4
1972	27.0	40.1	14.6	26.6	39.1	14.7	30.6	49.6	14.1
1971	26.6	39.5	14.4	26.1	38.5	14.2	31.3	49.2	15.3
1970	27.4	41.1	14.4	26.9	40.1	14.4	30.9	49.7	14.3
1969	28.5	42.9	14.9	27.9	41.6	14.8	33.7	54.4	15.3
1968	28.4	43.1	14.6	27.8	41.8	14.5	33.3	53.9	14.9
1967	27.8	41.9	14.5	27.4	41.1	14.4	31.1	49.4	14.6
1966	28.3	42.7	14.7	28.0	41.9	14.7	31.6	50.1	15.0
1965	26.6	40.1	13.7	26.2	39.4	13.7	29.2	46.4	13.7
1964	25.8	38.6	13.4	25.6	38.1	13.6	27.5	44.2	12.5
1963 ¹	24.3	36.9	12.3	24.4	36.7	12.6	26.5	42.7	11.8
1962 ¹	23.1	35.1	11.8	23.2	34.9	12.0	25.2	40.3	11.4
1961	22.1	33.8	10.9	21.9	33.4	10.8	23.9	38.0	11.0
1960	22.5	34.5	11.0	22.3	34.0	11.1	24.4	39.5	10.6
1959	22.8	35.1	11.0	22.5	34.5	11.0	25.0	40.5	10.8
1958	22.5	34.9	10.7	22.3	34.3	10.8	24.7	40.4	10.2
1957	24.1	37.4	11.4	23.8	36.8	11.2	27.3	43.5	12.5
1956	25.2	39.4	11.6	24.7	38.5	11.5	29.5	47.9	12.5
1955	24.6	38.4	11.6	24.3	37.8	11.4	28.1	45.1	12.6
1954	23.0	36.0	10.7	22.6	35.4	10.6	26.5	42.6	11.8
1953	24.8	38.9	11.6	24.4	38.0	11.5	29.3	47.8	12.3
1952	25.0	39.2	11.7	24.6	38.4	11.6	28.9	46.9	12.4
1951	24.6	38.5	11.4	24.2	37.8	11.2	28.3	45.2	12.5
1950 ²	23.3	36.4	10.7	23.1	35.9	10.6	25.7	41.2	11.1

[For 1968 and 1969 rates are based on deaths assigned to category numbers E810-E823 of the *Eighth Revision of the International Classification of Diseases, Adapted for Use in the United States*, adopted in 1965; for 1950-67 rates are based on deaths assigned to category numbers E810-E835 of the Sixth and Seventh Revisions adopted, respectively, in 1948 and 1955.

¹Figures by color exclude data for residents of New Jersey because this State did not require reporting of the item for these years.

²Based on enumerated population adjusted for age bias in the population of races other than white.

Source: Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, Maryland, Series 20, No. 16, Table K, p. 30.

Table 10

Age-adjusted death rates for All other accidents, by color and sex: United States, 1950-69

Year	Total			White			All other		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
1975	23.5	35.5	12.3	21.9	33.1	11.5	34.4	54.1	17.3
1974	24.2	36.2	12.8	22.6	33.8	12.0	35.3	54.8	18.2
1973	25.3	38.0	13.3	23.5	35.2	12.4	37.6	59.0	18.8
1972	25.0	37.3	13.4	23.1	34.4	12.5	38.1	59.7	19.3
1971	25.3	37.6	13.8	23.3	34.5	12.8	40.4	62.4	20.8
1970	26.3	39.6	13.8	24.1	36.2	12.8	41.9	66.0	20.7
1969	26.8	39.9	14.4	24.8	36.8	13.3	41.8	64.5	21.6
1968	26.7	39.4	14.7	24.4	35.8	13.6	43.7	68.2	21.9
1967	27.0	39.9	14.8	25.0	36.7	13.8	42.1	65.3	21.3
1966	27.3	39.9	15.3	25.1	36.6	14.0	44.1	66.2	24.1
1965	26.8	39.0	15.1	24.8	36.0	14.0	41.5	63.0	22.1
1964	26.3	38.2	14.9	24.3	35.3	13.7	40.8	61.0	22.5
1963 ¹	26.6	38.2	15.5	24.7	35.6	14.1	41.7	60.8	24.3
1962 ¹	26.6	38.1	15.4	24.8	35.7	14.2	41.3	60.2	24.0
1961	26.1	37.6	14.9	24.2	35.2	13.6	39.3	57.1	23.0
1960	27.4	39.3	15.8	25.3	36.5	14.4	42.9	61.6	25.5
1959	27.1	39.2	15.4	25.2	36.6	14.1	41.1	59.7	23.8
1958	27.3	39.3	15.8	25.4	36.7	14.3	42.0	59.7	25.6
1957	29.3	41.8	17.1	27.4	39.2	15.8	43.7	63.0	25.9
1956	29.2	41.8	17.0	27.5	39.4	15.8	42.5	61.7	24.8
1955	29.7	42.3	17.4	27.9	40.0	16.2	43.0	61.5	25.8
1954	30.1	42.9	17.7	28.4	40.6	16.6	43.3	62.0	26.0
1953	32.4	46.4	18.8	30.6	43.8	17.6	47.2	68.4	27.5
1952	33.8	47.7	20.3	31.8	44.8	19.0	49.5	71.4	29.2
1951	34.8	49.1	20.7	33.0	46.7	19.5	48.1	68.8	28.6
1950 ²	34.2	47.3	21.0	32.5	45.0	20.0	46.3	66.0	27.7

[For 1968 and 1969 rates are based on deaths assigned to category numbers E800-E807, E825-E949 of the *Eighth Revision of the International Classification of Diseases, Adapted for Use in the United States*, adopted in 1965; for 1950-67 rates are based on deaths assigned to category numbers E800-E802, E840-E962 of the Sixth and Seventh Revisions adopted, respectively, in 1948 and 1955.]

Source: Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, Maryland, Series 20, No. 16, Table K, p. 30.

References

1. Department of Health, Education, and Welfare, Vital & Health Statistics, "Persons Injured and Disability Days by Detailed Type and Class of Accident, U.S. 1971-1972", DHEW Publication No. (HRA) 76-1532, Series 10, No. 105. U.S. Government Printing Office, Washington, D.C., January 1976.
2. Department of Health Education, and Welfare, Vital & Health Statistics, "Impairments Due to Injury by class and type of accident, U.S.-July 1959-June 1961", Public Health Service Publication No. 1000, Series 10, No. 6. U.S. Government Printing Office, Washington, D.C., January 1964.
3. Department of Health, Education, and Welfare, Vital & Health Statistics, "Work Injuries Among Blue-Collar Workers and Disability Days, U.S.-July 1966-June 1967", DHEW Publication No. (HSM) 72-1035, Series 10, No. 68. U.S. Government Printing Office, February 1972.
4. Department of Health Education, and Welfare, Vital & Health Statistics, "Time Lost From Work Among the Currently Employed Population, U.S.-1968", DHEW Publication No. (HSM) 72-1053, Series 10, No. 71. U.S. Government Printing Office, Washington, D.C., April 1972.
5. Department of Health, Education, and Welfare, Vital & Health Statistics, "Persons Injured and Disability Days Due to Injury, U.S.-July 1965-June 1967", Public Health Service Publication No. 1000, Series 10, No. 58. U.S. Government Printing Office, Washington, D.C., March 1970.
6. Department of Health, Education, and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, Maryland, Series 20, No. 16, Table K, P. 30.
7. Department of Health, Education, and Welfare, Monthly Vital Statistics Report, Summary Report, Final Mortality Statistics 1970, Vol. 22, No. 8; 1971, Vol. 23, No. 3; 1972, Vol. 23, No. 8, 1973, Vol. 23, No. 11; 1974, Vol. 24, No. 11; 1975, Vol. 25, No. 11.

List of Tables

Table 1 Average annual number of persons injured and number of persons injured per 1,000 persons per year, by sex and demographic characteristics: United States, July 1965-June 1967. **149**

Table 2 Average annual number of persons injured and number of persons injured per 1,000 persons per year, by sex, color, and class of accident: United States, July 1965-June 1967. **150**

Table 3 Average annual number of persons injured and number of persons injured per 1,000 persons per year, by class of accident and selected characteristics: United States, 1971-72. **151**

Table 4 Average prevalence of impairments due to injury, and number and percent of impairments due to injury in the home, while at work, or in moving motor-vehicle accidents, by type of impairment: United States, July 1959-June 1961. **152**

Table 5 Average annual number of days of restricted activity due to injury and number of days per 100 persons per year, by age and selected characteristics: United States, 1971-72. **153**

Table 6 Average annual number of days of bed disability due to injury and number of days of bed disability per 100 persons per year, by age and selected characteristics: United States, 1971-72. **154**

Table 7 Average annual number of days lost from work or school due to injury and number of days lost per 100 currently employed persons or children 6-16 years per year, by age and selected characteristics: United States, 1971-72. **155**

Table 8 Age-adjusted death rates for Accidents, by color and sex: United States, 1950-69. **156**

Table 9 Age-adjusted death rates for Motor vehicle accidents, by color and sex: United States, 1950-69. **157**

Table 10 Age-adjusted death rates for All other accidents, by color and sex: United States, 1950-69. **158**

Chapter VIII

Mental Health

Contents

A. Overview	163
B. Introduction	163
C. Limitations in the Use of Biostatistical Metrics with Mental Health Data	164
D. Other Limitations in Making Cross-Group Comparisons	164
E. Utilization of Psychiatric Facilities	165
F. Rurality	167
G. Mental Disorders Among Native Americans	168
H. Utilization by Spanish Americans	169
I. Comparisons with Local Data	170
J. Drug Abuse	171
References	182
List of Tables	183
List of Figures	183

Chapter VIII

Mental Health

A. Overview

Although there are some objections to the medical model for conceptualizing mental health problems, it was felt to be the only reasonable means for analyzing this problem area, at this time. There are many limitations to mental health problems. Institution-based utilization rates appear to be the only recourse at this time, and the potential differences between these data and actual prevalence is obvious.

Patient care episodes have increased fourfold during the last two decades. During this time, there has been a shift toward outpatient utilization and away from county and state hospital utilization. Federally subsidized Community Mental Health Centers (CHMCs) have been responsible for a good measure of the increased utilization and shifts in setting, as have mental health services of community-based acute general hospitals. This period, also, witnessed decreases in average length of stay at inpatient facilities. One study was available for comparing local data with national norms in a community, where the register includes most ambulatory care from private practitioners, as well. This study makes it appear that in at least that one community, episode rates per base population are constant for the middle and upper income brackets, but are increasing for the lower income brackets.

There appears to be major sex and racial variations in the types of facilities used. Males and nonwhites use public facilities in greater proportions than do females and Whites. The meaning of this variation is not fully clear.

Blacks use CMHCs almost twice their proportion in the general population, their rates on the rural (population

density) variable approximating their distribution in the general population. Rural usage of CMHCs is less than urban usage for all racial/ethnic groups, presumably reflecting either a lesser stress of life condition, a lesser acceptance of such type of treatment, a lesser acceptance of the use of public facilities for such problems, or less access to services.

For Native Americans, the period between 1967 and 1972 saw mental disorders jump from ninth to sixth place in hospital admissions, while the number of patient days more than doubled. The increased utilization probably represents changes in the attitudes of the American Indian and Alaskan Natives toward mental health problems, rather than any increase in the incidences of such problems. Alcoholism, alcoholic psychoses, and drug dependency were the major categories of these hospitalizations, although they were almost all alcohol related, with deaths from alcoholism among these peoples ranging from 4.3 to 5.5 times the national rates.

While Spanish Americans constitute approximately 4.5 percent of the nation, their utilization of state and county hospitals accounted for only 3 percent of all admissions. There is reason to believe that their utilization rate may reflect their lack of acceptance of this type of health service, rather than the lack of prevalence of mental health problems for which other groups utilize such facilities. One indication that this might be the case is that the underutilization is much less for persons who are neither young or very old.

Spanish American mental patients are less educated than nonwhites and other white mental patients, and they like nonwhites had a higher propor-

tion of involuntary commitments than did other whites. Schizophrenia was the leading diagnosis for Spanish American state and county mental hospital admissions. Their admissions for alcoholism were lower than those for either the other whites or the nonwhites, while their admission rates for drug disorders was slightly higher than these comparison groups. Males outnumbered females in admissions by a significant amount, and in a consistent fashion.

Federally funded drug abuse centers make up a very large proportion of all of the drug abuse treatment in the country. A well-controlled data base, on the usage of those facilities, indicates that utilization rates are quite high for Blacks and Mexican-Americans. American Indians and Cubans use those facilities proportional to their numbers in the overall population and Whites, Puerto Ricans and Asians are underrepresented in their use. Blacks seem to start abusing heroin at a later age and go for a longer period of time before seeking treatment. Utilization for Blacks and Spanish Americans seem to be on the rise, and it is mostly related to heroin abuse. Rates for all groups associated with marihuana seems to be on a downward trend, while utilization rates associated with barbiturates and amphetamines are constant.

Mental health data have not been routinely, or systematically, collected at the national level. As with other health problems, the data which have been collected on mental and emotional disorders are tallies of the incidence of mental *illness*, rather than of mental health. The major obstacles to the development and collection of statistics on mental health, or illness, include the absence of standardized detection procedures for locating per-

sons in the general population with these disorders, the lack of reliable and uniform diagnostic techniques for assigning each case to a specific category, and the multiple methods for determining the dates of onset and termination of mental illness. Since more precise statistics on the incidence and prevalence of mental disorders are not available, statistics on the utilization patterns of psychiatric facilities, particularly mental hospitals, outpatient clinics, and community mental health centers, have been used as an approximation of the morbidity patterns associated with the various mental disorders.

There is an additional problem in the use of psychiatric facility data as a substitute for morbidity data. Findings from the studies aggregated here, using psychiatric facility data, give an incomplete picture since they exclude: (a) persons receiving care from private practitioners, since such care is not reported; and (b) those mentally ill persons not receiving either private practitioner or institutional care.

This chapter will report data on utilization rates for emotional maladjustments, neurotic disturbances, organic mental health problems, and drug abuse. This cluster of mental health problems will be discussed in light of the disparities between the disadvantaged and advantaged populations, comparisons between national and local data, trends in morbidity and mortality statistics, and potential contributory causes to each specific condition. Due to the lack of certain data, as well as data that are not disaggregated by either income level or race in all cases, some desired comparisons between the advantaged and disadvantaged cannot be made.

C. Limitations in the Use of Biostatistics Metrics with Mental Health Data

The prevalence of a disease, i.e., the number of people who at a given time are afflicted with the disease, is a function of both the annual incidence rate, i.e., the number of new cases that year, and the duration of the disease, and thus the number of cases initiated dur-

ing the previous years. The differences in prevalence of a mental disorder between whites and nonwhites, and between the poor and non-poor, therefore, are dependent on the relative differences between both the incidence rates for each group, as well as the duration of the disease following its onset. If these components vary, the differences may really be due to differences in care, differences in noting the progress in the recovery from the disease, or differences in which the patients are returned to the community, because of situations of family, and social and economic support.

The resident-patient rate has been employed as a measure of prevalence of mental disorders. There are distinct limitations to using such a rate, however, since the patient-resident rate is a function of the rate of admissions, readmissions, releases, and deaths. In addition, the resident patient rate is determined by the presence, or absence, of non-residential facilities in the area, the admission and discharge policies of the hospital, staffing patterns, the duration of treatment programs, availability of a home or other institution to which the patient can be released, and the criteria for recovery, which determines the time at which the patient is released back into the community.

Determining the incidence rate of a mental disease is much more difficult than determining its prevalence, since establishing incidence rates requires establishing when the health problem started. It, thus, relies on psychiatric evaluation of data from the patient, members of the family, or other person's knowledge of the patient's life. The most commonly used method in the studies cited, herein, is to use the first admission to a psychiatric facility as the date of onset of the mental health problem. Using the first admission to a mental hospital, particularly, for a trend analyses is now generally recognized as a very weak measure of incidence, since these rates will vary from time to time and from place to place, as a function of the institution,

and of many types of changes in the care and treatment of the mentally ill. For example, at one time, those seeking psychiatric treatment consisted mostly of the incapacitated. Now, psychiatric help is sought for many lesser mental health problems. Also, most psychiatric care was previously rendered in public institutions. Now, a much larger amount of mental health care is rendered in non-reporting private institutions, and in non-institutional settings.

Finally, it should be noted that we are treating mental health problems using health system nomenclature. We call it "disease," and note the use of the "delivery system" in "treating" and "curing" these "health problems." There are those who feel that the medical model is an incorrect one to employ in either the understanding or handling of this problem. We are employing the medical model here not in the way of taking-up sides, but rather as an only recourse of analyzing and discussing this problem area, while waiting for our social philosophy and developments in mental health technology to catch-up with our needs.

D. Other Limitations in Making Cross-Group Comparisons

Before discussing the comparisons of accessibility and utilization of mental health services, between the poor and non-poor, and the white and nonwhite populations, one other factor must be taken into consideration: the pattern of institutionalization by different social classes. Types of behavior that are considered to be psychiatrically abnormal by one socioeconomic or ethnic group are not always considered abnormal by members of another socioeconomic group. Additionally, there seems to be some evidence that blacks and whites are differentially diagnosed for similar behavioral problems. For example, Cannon and Locke (1976) report studies that show whites are more likely to be diagnosed with depressive disorders, while blacks and other nonwhites are more likely to be diagnosed as schizophrenic. They hypothesized

that this tendency to diagnose blacks as schizophrenic more frequently than whites may be due to the differences in the quality of communication between black patients and their white psychiatrists, as compared to the communications of white patients with white psychiatrists. It has been surmised that it could be a reflection of the diagnostic habits of psychiatrists, as well. They go on to report a study by Raskin where he observed that when age and social class were controlled, blacks had a more rapid onset of symptoms, and, also, received less psychoactive medication, and probably less psychiatric treatment prior to hospitalization than did their white counterparts.

Cannon and Locke, also, report the findings of Simon's study conducted in nine state psychiatric hospitals serving New York City and surrounding areas. The basic outcome of the study was that a diagnosis of schizophrenia, rather than depression, was given more frequently to blacks than whites by hospital personnel. This was in direct contrast with Simon's findings that race and diagnosis were independent. Simon, also, says that black behavior patterns baffle most middle-class-oriented mental health professionals, and will continue to do so until blacks are viewed as a culturally distinct group, with unique values and coping mechanisms. When blacks are compared with whites, black depressives have a different quality of mental disturbance than do white depressive patients.

According to Cannon and Locke's investigations,

"Those patients who are classified as clinic or charity patients, who obtain services in public facilities, are generally felt to receive treatment inferior to that received by patients who are more affluent and receive treatment in private facilities. The poor and disadvantaged, usually black, are more likely to be assigned to 15 minute clinics as opposed to longer term therapy. They are also more

likely to be seen by inexperienced therapists, and given drug therapy with minimal psychiatric support treatment."

Rosen (1974) touches only briefly on differential diagnostic patterns, but she does say that the available data document the findings of many community studies that the lower socioeconomic classes tend to receive more serious diagnoses.

Standards of deviant behavior and acceptable behavior are relative. No isolated bit of behavior, or symptom, can be considered to be inherently deviant or mentally ill. The crucial factor is the social milieu in which the behavior occurs. A given behavior, depending upon the cultural situation, may be considered socially acceptable, criminal, or reflective of mental illness.

E. Utilization of Psychiatric Facilities

Patient care episodes are defined as the number of patients on the roll of a facility at the beginning of the year, plus the total additions to these facilities during the year. Total additions during the year include new admissions, readmissions, and returns from leave. It is, therefore, a duplicated count of individual patients.

Total patient care episodes, which includes both hospitalized mental patients and ambulatory mental patients, increased almost fourfold from 1955 to 1975, while episodes per 100,000 population increased just under threefold, indicating some increased transiency. The bulk of the increase came from increased utilization of outpatient facilities. In 1955, outpatient visits accounted for only 23 percent of all psychiatric episodes. By 1975, this setting accounted for 72 percent of all psychiatric episodes.

While increases during this 20 year period were occurring in inpatient mental facilities utilization, a shift occurred in the type of facilities utilized. Increases in general hospital utilization increased by 213 percent, and by 1975 accounted for almost as many psychiatric hospitalizations as did State and County hospitals. Veterans

Administration hospital episodes increased by 243 percent, private mental hospital episodes increased by 34 percent, and federally-assisted community mental health centers, which were not operating at the beginning of that period, were by 1975 accounting for inpatient episodes that equalled 41 percent of those accounted for by State and Community hospitals in the same year. While all of these locales were subjected to increasing inpatient episode rates, State and County hospitals in 1975 were accounting for only 83 percent of the number of inpatient episodes that they had in 1955.

We might deviate from the medical model to a socio-medical model for one additional analysis. When one suffers from a medical disease, one may manifest behaviors that are sufficiently deviant to be considered anti-social. The result is institutionalization, but in penal, rather than mental, institutions. It depends, of course, on how one defines mental illness, as to what proportion of the prison population could be considered as being mentally ill. There is no intent to solve that definitional problem herein, but an inspection of the racial breakdown of prison populations does indicate that, depending on the definition, mental health problems could be more severe among racial minorities. Census figures indicate rates per 100,000 population for whites dropping from 134.4 in 1960 to 105.3 in 1970, a 22 percent decrease, while those for racial minorities increase from 654.2 in 1960 to 991.4 in 1970, a 52 percent increase. Thus, during this 10-year period, the ratio of rates of racial minorities to whites in correctional institutions rose from 4.86 to 9.42.

Since 1955, there has been an uninterrupted decrease in the number of resident patients in state mental hospitals. The first year of the decline, 1956, coincided with the large scale introduction of psychotropic drugs. In the early 1960's, other factors had significant influences in reducing the resident populations. These factors included more efficient admission and discharge procedures, more effective

utilization review procedures, increase in availability and use of alternative resources in the community, and a gradual reduction in the residential average length of stay. The community mental health center was becoming an increasingly significant resource, both in the number of patients it served and in the number of facilities in existence. Table 2 presents data on the number and type of psychiatric facilities in the United States in 1955, 1963, and 1971. These data clearly demonstrate the marked increase in the use of community based services. Table 3 presents a breakdown of the persons in mental institutions by race and sex. Table 4 presents the distribution of additions by sex and race to federally funded mental health centers in the years from 1972 to 1975. The non-white population appears to have used these facilities in a proportion slightly higher than their representation in the overall population, at the start of the period, and that proportion seemed to be on the rise throughout the reporting period.

Figure 2 presents an analysis of the diagnostic patterns of white and non-white patients seen in psychiatric outpatient clinics in 1961 and in 1969. There is an increase in the proportion of nonwhites with psychoses and non-white males with personality disorders. For 1961, the pattern seen is either that nonwhites were diagnosed more frequently as having more serious disorders than whites, or nonwhites with these diagnoses sought outpatient care in these facilities in a disproportionate fashion.

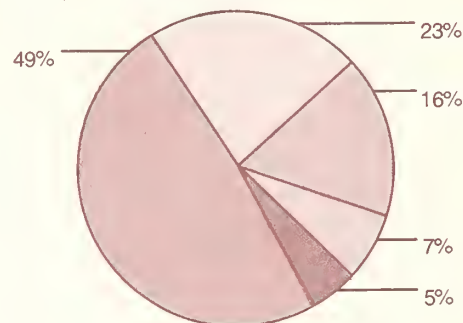
In one special NIMH report, data from six independent NIMH surveys, conducted roughly between June 1970 to July 1971, were combined, and an examination was given to the relationship of race to the type of facility used. For purposes of that study, facility types were divided into public and nonpublic. Federal, State, and local government controlled facilities and federally funded community health centers were considered public facilities, while for-profit, non-profit and church-controlled facilities were

Inpatient and Outpatient Care

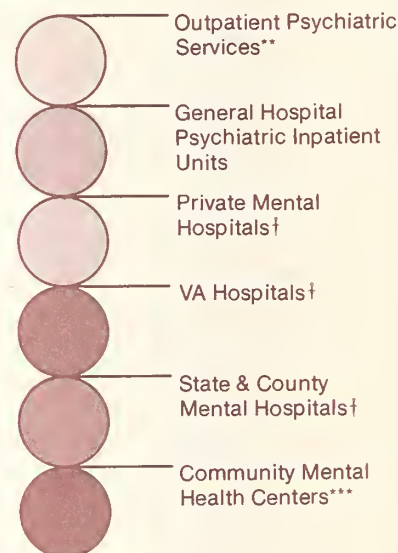
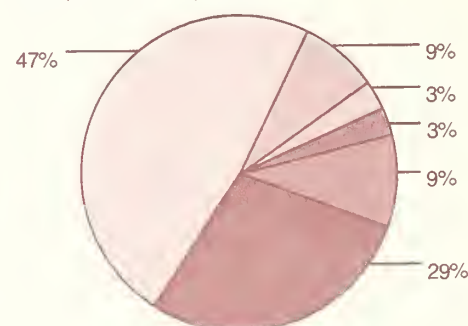
Percent Distribution of Inpatient and Outpatient Care Episodes in Mental Health Facilities, by Type of Facility: United States 1955 and 1975.

Figure 1.

1955 (1.7 Million Episodes)



1975 (6.4 Million Episodes)



†Inpatient services only.

**Includes residential treatment centers for emotionally disturbed children.

***Includes free-standing outpatient services as well as those affiliated with psychiatric and general hospitals.

***Includes inpatient and outpatient services of federally funded CMHC's.

considered nonpublic. Sex as well as racial differences were found in the utilization of facilities so grouped. The differences varied between inpatient and outpatient types of utilization. With inpatient utilization, only one-fourth of all white males admitted as inpatients used nonpublic facilities, whereas one half of the white female inpatients used those type of facilities. Similarly, only 7 percent of nonwhite male inpatients used such facilities, although 18 percent nonwhite female inpatients used nonpublic facilities. The ratio between total white to total nonwhite usage of nonpublic facilities was slightly over 3. More of the discrepancy was made up by the males, however, since the male white to male nonwhite inpatient ratio was 3.7, while the similar ratio for females was 2.7.

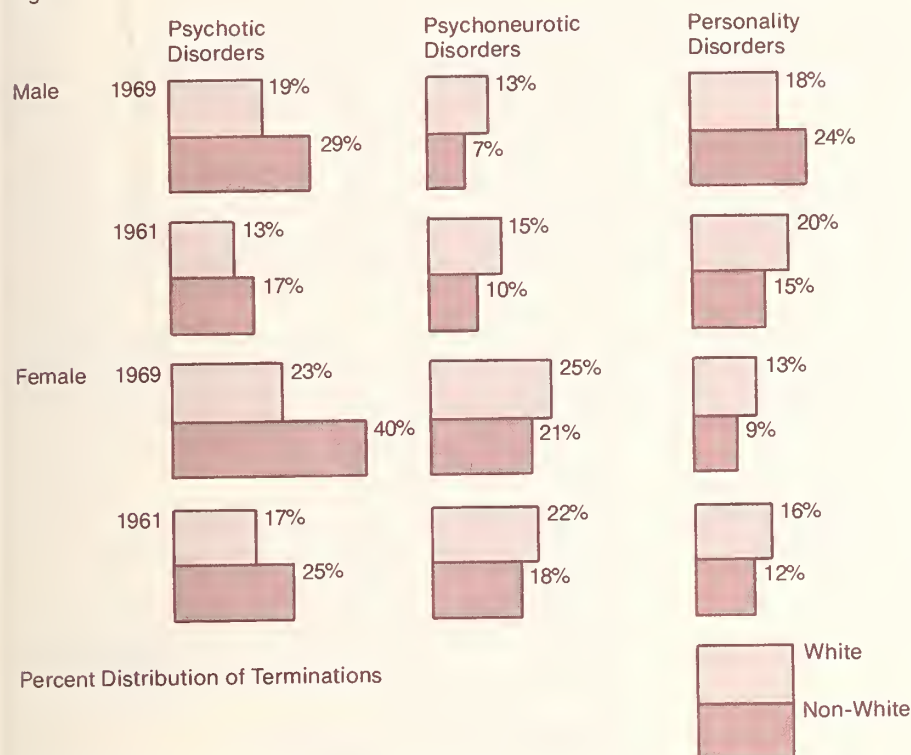
A different picture emerged with outpatient facility utilization. White male and white females had identical utilization rates for nonpublic facilities, 31 percent. Nonwhite utilization varied greatly by sex. Nonwhite females had higher nonpublic outpatient utilization rates than both sexes of whites, 37.6 percent, while nonwhite males had much lower rates, 16.6 percent.

That racial and sex discrepancies occurred in nonpublic facility utilization for mental health services is obvious. What the meanings of these discrepancies are is not so obvious. Although the report contains no discussion of the issue, the reason for NIMH's disaggregation of the data, by public and nonpublic utilization in the first place, indicates an expected

Outpatient Psychiatric Clinics

Percent Distribution of Terminations from Outpatient Psychiatric Clinics, by Sex and Race, According to Diagnostic Classification, United States, 1969 and 1961.

Figure 2.



Percent Distribution of Terminations

Source: Biometry Branch, National Institute of Mental Health.

meaning to the differences found. One is led to suspect that the expected meaning was that patients utilizing public facilities do not get equivalent care to that rendered by nonpublic facilities, and that the inequivalence is in the direction of poorer care. Although a number of points can be advanced in an argument for such a position, no evaluative data demonstrating that difference was found. In trying to interpret the demonstrated difference, it is, also, necessary to keep in mind that public facilities are not necessarily similar in the diagnostic profile of their admissions. Public hospitals have higher proportions of patients with mental retardation, organic brain syndromes, schizophrenia, alcoholism, drug abuse, and undiagnosed conditions,

while nonpublic institutions have greater proportions of patients with depressive disorders, psychoses other than schizophrenia, and other categories for which separate tabulations were not made. Whether this difference is due to the way diagnostic labels are used, the types of services rendered, or the needs of the subpopulations using those facilities is not clear. But it is quite obvious that additional analysis is necessary before conclusions can be drawn about the racial and sex variations in the usage of public vs. nonpublic facilities.

Of more immediate concern is whether the racial differences found are related to income levels. Figure 3 depicts outpatient utilization of psychiatric services in 1969, by race and income level.

Utilization is an increasing monotonic inverse function of family income. The lower the income level the greater the utilization. As income rises, however, the utilization rate decreases initially, at a more rapid rate for racial minorities than for whites, although it appears to be evening out at higher income levels. Over the five income categories presented, for which rates are available for racial subgroups, the ratios of the rates of the whites to racial minorities subgroups, for increasing income categories, are .99, almost identical in the lowest income group: 1.42, 1.81, 1.81, and 1.28.

This U-shaped function does not help us with our attributional analysis. There are three reasons why different racial rates might exist: (a) there may be "differential prevalence" of mental illness between racial groups; (b) there may be greater unmet health care needs in one of the racial groups; or (c) it might be that the health needs of one group are being met in other settings. All three reasons might generate such a curve. At this point, we merely know that the first two reasons are speculative, while we know the last of these to really be the case.

F. Rurality

The effects of rurality on utilization rates at community mental health centers, during the year 1971, were explored in an NIMH Statistical Note (102). The centers were classified on the rurality dimension as follows: a *rural* center was one serving a catchment area which consisted exclusively of rural counties. Rural counties were defined as those located outside standard metropolitan statistical areas and having more than half their populations living in communities of 2500 or less. A *non-rural* center was one which served a catchment area containing no rural county as defined above. A *part rural* center was one serving a mixed catchment area with one or more rural and one or more non-rural counties. In 1971, there were a total of 295 centers. Of these 295 centers, 175 were non-rural (59.2 percent), 87 were part rural (29.5 percent), and 33 were rural (11.2 percent). The breakdown of

these centers, by their rurality designation, and the unduplicated percentage of additions, during that calendar year, are contained in Figure 4. The total estimated number of unduplicated additions to community mental health centers in 1971 were 432,640. The breakdown of additions, in terms of rurality, was 70.9 percent nonrural, 21.5 percent part-rural, and 7.6 percent rural.

Table 5 presents a summary of characteristics of patients using CMHC's. In all areas combined, and irrespective of age, whites represented almost 79 percent of all additions. Relatively greater numbers of blacks were representative of total additions to non-rural centers, where they accounted for 20 percent of all additions. Blacks represented almost 9 percent of all additions to rural centers, and 6 percent of all additions to part-rural centers, (Table 6). This pattern, roughly, follows the distribution of blacks within the general population.

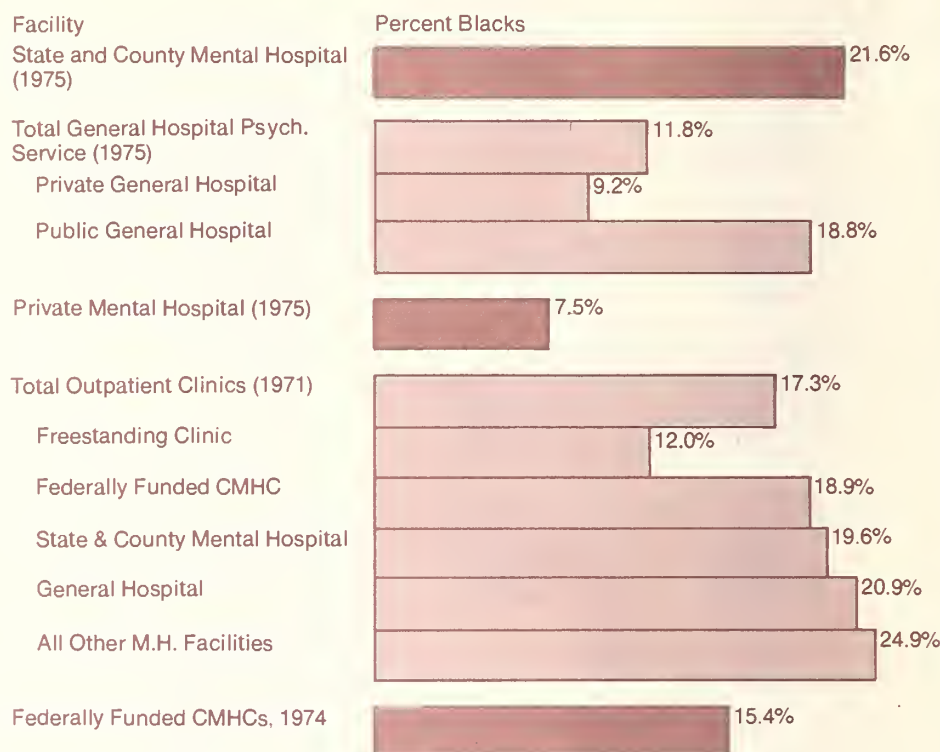
The division of male and female additions appears to be fairly constant across all rurality groups for both whites and blacks, with a slightly higher proportion of female additions in all rurality groups. Among whites, there were almost 11 percent more females, and among blacks, there were almost 9 percent more female additions.

Rosen (1974) investigated the patterns of utilization across the various geographic areas of the United States. She presents evidence which shows that, regardless of the location, the poor are the major users of community mental health centers. In the rural areas, utilization rates are lower as compared to urban or part rural areas. Social attitudes, such as receptivity toward psychiatric care, tolerance of deviant behavior, as well as appropriateness of service, accessibility to alternative mental health centers, are attributed as being responsible for this difference. Rosen points out that people living in the rural areas of the country, particularly those living in the Southern states, look upon public facilities with more disdain than per-

Type of Mental Health Facility

Blacks as Percent of Total Admissions or Discharges by Type of Facility (1971, 1974, or 1975)

Figure 3.



Source: Cannon, M. S. and B. Z. Locke, "Being Black is Detrimental to Ones Mental Health: Myth or Reality." Paper presented at W.E.B. Dubois Conference on the Health of Black Populations, Atlanta University, 1976.

sons in urban areas. Persons living in rural areas are less likely to use community health services, as well as welfare services, because they have a feeling of pride in being able to take care of their own needs.

G. Mental Disorders Among Native Americans

Mental disorders are a major and growing cause for hospitalizations in Indian Health Service hospitals and that Service's contract hospitals. Table 7 presents the total number of discharges, and total hospital days due to mental disorders, for the fiscal years 1967 through 1972. In 1967, mental disorders were the ninth leading cause of hospitalization. From 1967 to 1972, however, the number of discharges in the mental disorder category nearly doubled, and by 1972 this category

ranked sixth. Hospital days associated with mental disorders, also, more than doubled during this period.

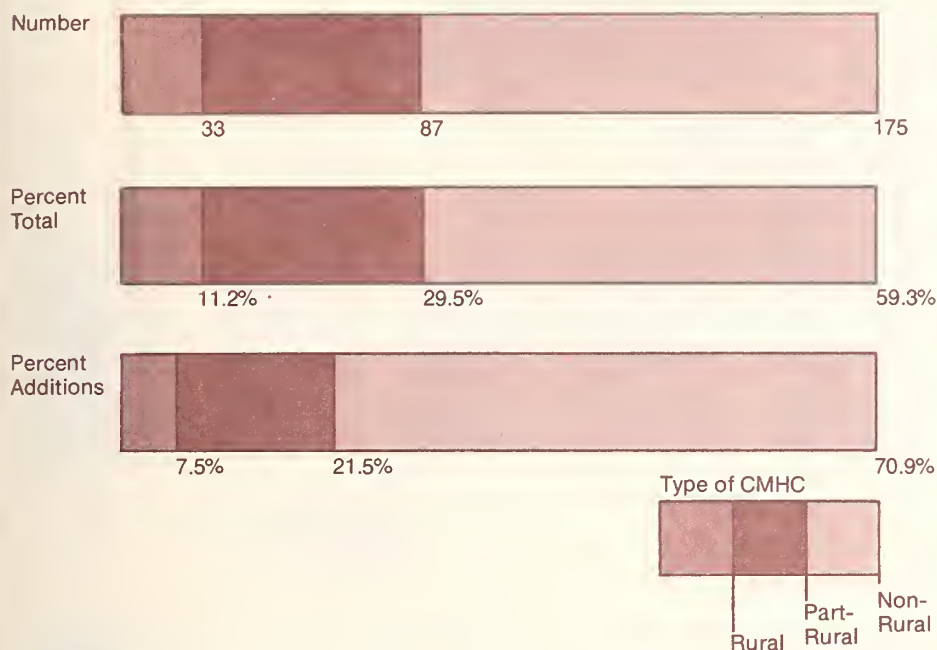
The Indian Health Service Discharge Summary for 1967-1972 has indicated that the upward trend in the number of patients hospitalized, with mental disorders, reflects the attempt of the Indian Health Service to recognize and to deal with mental health problems in this population. This increased mental health service to the Indian and Alaskan Native population has been facilitated by the change in their attitudes toward mental disorders, including alcoholism. Native Americans have become less resistant to seeking outside help for mental problems and disorders.

Alcoholism is one of the most serious health problems facing the Indian peo-

Additions to CMHC

Unduplicated Additions to the 295 CMHC's Operating During 1971

Figure 4.



Source: Biometry Branch, National Institute for Mental Health

ple. The death rate for alcoholism for the Indian and Alaskan Native, during the past few years, has ranged from 4.3 to 5.5 times the United States rate for all races. In 1975, the alcoholism death rate declined, slightly, below the rates experienced in 1973 and 1974, but no trend in this direction is, necessarily, indicated. About 400 Indian and Alaskan Natives have died as a result of alcoholism related causes, during 1973, 1974, and 1975.

About 56 percent of the deaths from alcoholism among the Indian population were the result of cirrhosis of the liver, with mention of alcoholism; 42 percent were in some way related to alcoholism; and the remaining two percent were due to alcoholic psychoses (see Table 8).

In the years 1967 to 1972, alcoholic psychosis and drug dependence accounted for the majority of the discharges in the mental disorder category (see Table 9). In 1972, two-thirds of the patients with a primary diagnosis of mental disorder were hospitalized,

because of alcoholism, alcoholic psychosis, or drug dependence; and in more than 98 percent of the cases, the agent was alcohol. Three-fourths of those inpatients with alcohol problems were male. From Figure 5, it can be seen that the relative frequencies of the mental disorders, in 1976, are similar to those in the previous ten years.

During the fiscal year 1976, the number of outpatient visits to Indian Health Service and contract health service facilities for mental disorders were 64,380. Of these, 60,381 were made by persons under the age of 65, and another 3,195 being made by persons over the age of 65. For the remaining 364, the age was not specified. (Unpublished data from Indian Health Service, 1977).

H. Utilization by Spanish Americans

According to the 1970 census, Spanish Americans numbered 9.1 million people, of whom 2.4 million were in poverty. As of 1970, the breakdown of the Spanish American population, ac-

cording to national origin, was as follows:

<i>Spanish American Group</i>	<i>Population (in 1,000's)</i>
All Spanish Americans	9,073.6
Mexican Americans	4,532.4
Puerto Rican	1,429.4
Cuban	545.6
Central and South American	1,508.9
Other Spanish	1,057.3

According to NIMH's Statistical Note 116, during 1972, about 12,300 Spanish Americans were admitted to state and county mental hospitals in the United States. They represented 3 percent of all admissions, which is slightly less than a proportional representation of their numbers in the Nation. When compared with other Whites and nonwhites, mental patients of Spanish American origin had relatively higher proportions of very young and very old. About 60 percent of the Spanish Americans admitted to such institutions were under 35 years of age, as compared with slightly more than 40 percent of other White and slightly less than half of nonwhite admissions. Spanish American male admissions were especially young, with more than one third of them being under the age of 25. In the 65 year and older age group, the rate for Spanish Americans exceeded the rates for both whites and nonwhites. For the Spanish Americans there were 278 per 100,000 population, while for other whites and nonwhites there were 127 and 259 per 100,000 population, respectively.

This U-shaped digression from the age distributions of the other population groups may represent a number of different factors operating among these people. If, in the future, the data are aggregated within age groups by: (a) reason for admission, and (b) person authorizing admissions, perhaps, then, hypotheses may be formulated, which would be less speculative than those that could be generated by the current data.

Spanish American mental patients, on the whole, were less educated than

similar patients from other ethnic groups. The median years of school completed were 8.9, 9.7 and 10.4 years for Spanish Americans, non-whites, and whites, respectively. About one-third of Spanish American patients admitted during 1972, had less than a grade school education, as compared with 27 per cent of non-whites, and 16 percent of other-whites.

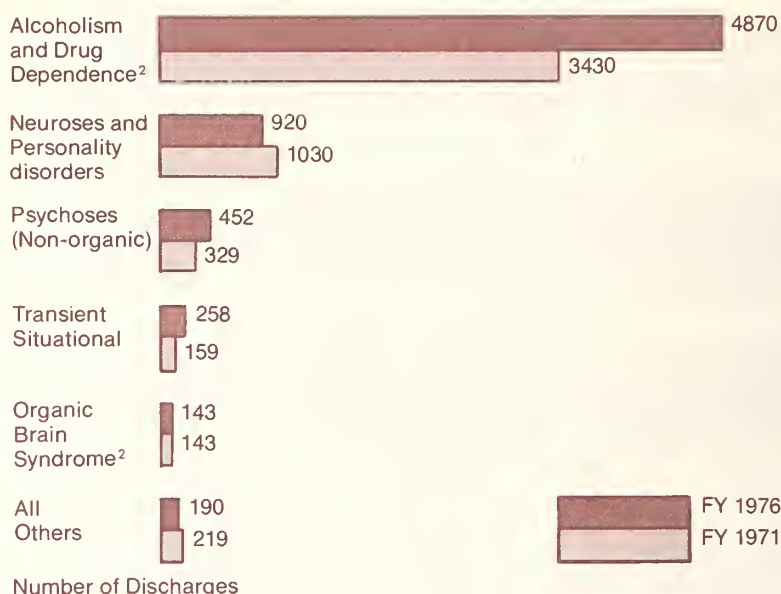
Nearly 30 percent of the Spanish Americans admitted to state and county mental hospitals were given a primary diagnosis of schizophrenia. While this was similar to the rates for other whites, this percentage was lower than that for nonwhites, among whom nearly 40 percent were diagnosed as schizophrenic. Alcohol disorders which occurred as a primary diagnosis among nonwhite admissions, at a rate of 77 per 100,000 population, occurred less frequently among other whites, 49 per 100,000 population, and much less frequently among Spanish Americans, 22 per 100,000 population. On the other hand, Spanish Americans had slightly higher rates for drug disorders, 22 per 100,000 population, than did other-whites, 18 per 100,000 population, and nonwhites, 19 per 100,000 population. This latter health problem may lead to some wrong conclusions, because of the relatively diverse groups that have been clumped under the rubric Spanish American. It will be seen in a later section of this chapter that drug disorders are frequent health problems among one of the subgroups, Mexican-Americans, constituting the Spanish-American cluster, and not among the others, Cubans and Puerto Ricans.

Involuntary commitments of Spanish Americans to State and County mental hospitals, in 1972, was identical to that of nonwhites, being almost one-half of all their admissions, 47.4 percent for each group. This ran ahead of the rate for the other white group, for whom only 40.2 percent of their admissions were involuntary. As for voluntary admissions, the other-white group led by 52.1 percent, followed by the Spanish American group with 42.7

Discharges—Mental Disorders

Number of Discharges from IHS and Contract Hospitals by Type of Mental Disorder, Fiscal Years 1971 and 1976.

Figure 5.



Number of Discharges

¹ Includes Alcohol Psychosis. Includes 45 and 44 Drug Dependence Discharges in Fiscal Years 1976 and 1971 Respectively.

² Excludes Alcohol Psychosis.

Source: Trajectory of Indian Health Care, Indian Health Service.

percent, and the nonwhite group with only 35.4 percent. The other major admission category, where the Spanish American group seemed to be distinct, was the category of incompetence to stand trial. In this category, the Spanish-American rate of 3.1 percent was part-way between the other white of 1.1 percent, and the nonwhite rate of 6.9 percent.

According to the NIMH data cited, there is a consistency with which males outnumber the females among Spanish American mental patients. This greater number of males in the patient population is not a function of a greater number of males in the base population. The Spanish-American base population, except for the Mexican American component, as with the total population, contains more females than it does males. Two tentative explanations for this were advanced by the NIMH report. The first of these was that Mexican-American males may have a greater genetic predisposition to mental illness than do

the females of those ethnic groups. Their second hypothesis was that there may be some differences which have sociological bases. These might include the perception of the normal behavior of Spanish Americans by mental health personnel, as well as the demands being greater for the male subgroup. No data are advanced as partial support to these conjectures, and further analysis must await data collected, specifically, to test these hypotheses, or for that needed to gain additional insights.

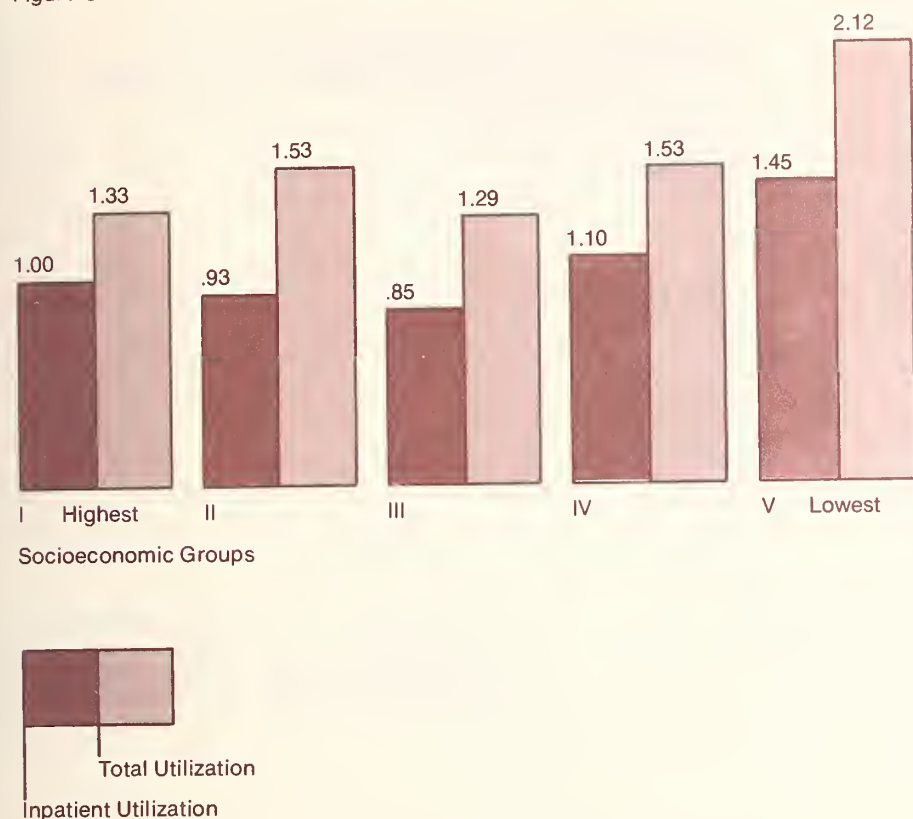
I. Comparisons with Local Data

The data from Monroe County New York provide a unique picture of psychiatric care in a single community in two ways. First, the data are based on a psychiatric case register, reflecting annual unduplicated counts of persons receiving psychiatric care. Second, the Monroe County register is the only register in the country, in which data are available not only for all public and private outpatient and inpatient psychiatric facilities, but for 90 per-

Psychiatric Care Utilization

Ratios of 1971 to 1962 Annual Rates of Psychiatric Care Utilization

Figure 6.



Source: Biometry Branch, National Institute for Mental Health

cent of the private practicing psychiatrists as well. Thus, it is possible to obtain a nearly complete picture of how all residents of the entire county use psychiatric facilities.

Monroe County, in 1970, had a population of 712,000 persons, of whom 296,000 lived in its major city, Rochester. The median income for families, individuals living separately, and unrelated individuals living together in that year was \$10,153 compared with \$7,699 for the United States, as a whole. Table 10 shows higher rates of utilization of psychiatric facilities by persons in the lowest socioeconomic levels, during the ten year period between 1962 and 1971.

Since the functions underlying the total psychiatric care trends depicted in Figure 6 are monotonic, a summary

table made up of the ratios of the last to first years' annual utilization rates was prepared. These ratios, contained in Table 10, show that the inpatient rates for the three highest socioeconomic groups remained fairly constant, actually decreasing for Group III, the middle-most group. The rate for the next to the lowest group increased by 10 percent, while the lowest socioeconomic group increased by 45 percent. It should be noted that there seems to be a slight trend downward, starting in 1969, for all but the lowest socioeconomic group.

J. Drug Abuse

The National Institutes of Drug Abuse operates a data bank containing information on all clients admitted to and discharged from federally funded drug abuse treatment programs. The data

base is called CODAP, which is an acronym for Clinic Oriented Data Acquisition Process. Reports from this data base are filed quarterly. The findings reported here are those from the most recent quarter available at the time of this writing, and they cover the time period of April, May, and June of 1976. During April and May, 1,854 clinics provided data for this system, with that number increasing to 1,887 for the month of June. These data covered over 60,000 admissions and a slightly greater number of discharges.

The proportions of patients receiving drug abuse treatment services is presented in Figure 7, broken down by the racial/ethnic groups that are tallied separately. Also, presented are comparative proportions of the representation of those groups in the general population. From that table, it can be seen that Black, Puerto Rican, and Mexican-American groups are over-represented among the clinic clients. American Indians and Cubans are represented proportional to their numbers in the population, while the White and Asian groups are under-represented.

The predominant drug problem for clients under 18 years of age was marihuana. With respect to ethnic racial groups, White clients were less likely to be opiate abusers than Black or Spanish clients, regardless of sex. For White, Spanish American, and Black clients, the mean age of first use of a primary drug were 18.7, 18.1, and 20.9 years. Black clients were less likely than either Spanish American or White clients to seek treatment during the first three years of continuing use of their primary drug. The time interval between the first use and first continuing use of a primary drug was less than one year for 58.9 percent of all clients. Table 11 presents a recent breakdown of drug clinic utilization by quarters for 1975 and the first two quarters of 1976. Utilization rates for Whites and others seem to be relatively constant, while the rates for Blacks and Spanish Americans seem to be on the rise.

Drug clinic utilization has been disaggregated in Table 12, by the four main drug groups with which clinic patients are involved. The overall trend is for increased utilization from opiate abusers, while decreasing numbers of marihuana abusers are using the clinics. The utilization of barbiturates and amphetamines is remaining relatively constant. The relative proportion of black opiate abusers was running about four times their proportion in the general population, but it appears to be on a slight downward trend. That same drug category is leading to increasing numbers of Spanish Americans using the clinic, even though their rate is already running almost three times their proportion in the general population.

Marihuana abuse does not seem to be presenting much of a dynamic situation, and the clinic usage patterns show blacks with rates about one-and-a-half, and Spanish Americans with about twice the utilization rates, as those groups are represented in the general population.

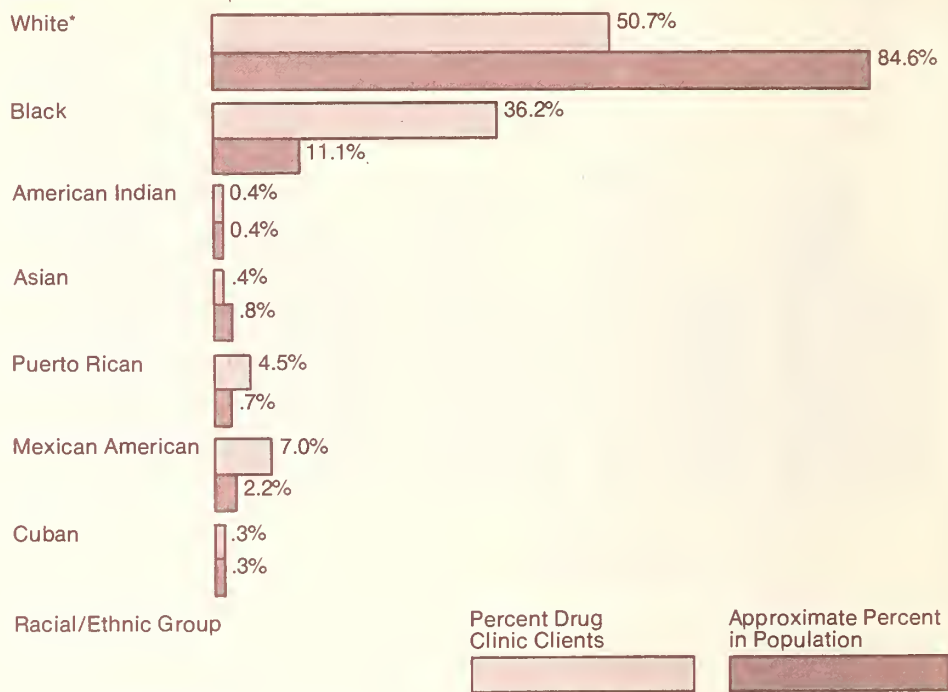
The racial/ethnic groups use clinic services for barbiturates and amphetamines in almost exact proportions as they are represented in the general population. There does seem to be an upward trend for Spanish American clinic usage of both of these drugs, and a similar upward trend for blacks using amphetamines. The decreasing proportion of white usage for both of these drugs represents a real decrease, and not just an offset since utilization of these drugs is at least stable and slightly increasing.

Although we might observe that the rates of abuse are not necessarily reflected in clinic services utilization, the rates may be an accurate indication of the actual pattern of utilization of all drug abuse health services, since there are not many other practitioners or facilities in most communities that can, or do try to, handle such cases. Whether drug abuse patterns are, also, accurately reflected by utilization of drug abuse health services is another matter, and one that cannot be resolved by available data.

Drug Abuse

Utilization of Federally Funded Drug Abuse

Figure 7.



According to CODAP data, the most common treatment regimen was the drug free modality in an outpatient environment. About 24 percent of all persons discharged completed treatment. Among those patients who completed treatment, those who had been admitted to the maintenance modality were in treatment longer than those admitted to other modalities. About 59 percent of all clients who completed treatment, after being admitted for drug free treatment in an outpatient environment, were in treatment for six months or less.

The Pittsburgh Black Action Methadone Program reported the outcomes of their methadone therapy (Cleveland, et al, 1974). Their positive outcomes were: a reasonably high rate of retention in the program; some reduction in police arrests, presumably reflecting a decrease in antisocial acts; and a marked decrease in heroin use. The rate of retention after one

year, with 230 patients, was 76.6 percent. During the second year, 175 remained in the program, and 125 had dropped out. The retention of clients in their methadone program reflects the effectiveness of methadone as a heroin substitute, as does a decrease in heroin use. The decrease in the arrest rate may also reflect the effectiveness in the program, since the necessity of acquiring large sums of money to purchase heroin is probably responsible for the actions leading to most of the arrests. Failure of the methadone treatment program to increase the employment rate was not surprising to the program staff, since most heroin addicts had never been employed regularly, either before or during the time of their addiction. They were largely unemployable, because they lacked education, job skills, work habits, and a motivation to work. The staff felt it would be unrealistic to expect administration of a drug to correct these deficiencies.

Table 1

Number and percent distribution and rate per 100,000 population of inpatient and outpatient care episodes¹, in selected mental health facilities, by type of facility: United States, 1955, 1965, 1971, and 1975 (Provisional)

Year	Total All ¹ Facilities	Inpatient Services of:						Outpatient Psychiatric Services of:		
		All	State &	Private	Gen. Hosp.	VA	Federally	All	Federally	Other
		Inpatient Services	County Mental Hospitals	Mental ² Hospitals	Psychiatric Service (non-VA)	Psychiatric Inpatient Services	Assisted Comm. Men. Health Cen.	Outpatient Services	Assisted Comm. Men. Health Cen.	
Number of Patient Care Episodes										
1975	6,409,447	1,791,171	598,993	165,327	565,696	214,264	246,891	4,618,276	1,584,968	3,033,308
1971	4,038,143	1,721,389	745,259	126,600	542,642	176,800	130,088	2,316,754	622,906	1,693,848
1965	2,636,525	1,565,525	804,926	125,428	519,328	115,843	—	1,071,000	—	1,071,000
1955	1,675,352	1,296,352	818,832	123,231	265,934	88,355	—	379,000	—	379,000
Percent Distribution										
1975	100.0	27.9	9.3	2.6	8.8	3.3	3.9	72.1	24.7	47.4
1971	100.0	42.6	18.5	3.1	13.4	4.4	3.2	57.4	15.4	42.0
1965	100.0	59.4	30.5	4.8	19.7	4.4	—	40.6	—	40.6
1955	100.0	77.4	48.9	7.3	15.9	5.3	—	22.6	—	22.6
Rate per 100,000 Population										
1975	3033	847	283	78	268	101	117	2185	750	1435
1971	1977	843	365	62	266	87	64	1134	305	829
1965	1376	817	420	65	271	60	—	559	—	559
1955	1028	795	502	76	163	54	—	233	—	233

¹In order to present trends on the same set of facilities over this interval, it has been necessary to exclude from this table the following private psychiatric office practice; psychiatric service modes of all types in hospitals or outpatient clinics of Federal agencies other than the VA (e.g., Public Health Service, Indian Health Service, Department of Defense Bureau of Prisons, etc.); inpatient service modes of multiservice facilities not shown in this table; all partial care episodes, and outpatient episodes of VA hospitals.

²Includes estimates of episodes of care in residential treatment centers for emotionally disturbed children.

Source (All years except 1975): The National Institute of Mental Health, *Utilization of Mental Health Facilities*, 1971, Series B, No. 5 January 1974, Table 22

Source (1975): Unpublished provisional data from the National Institute of Mental Health.

Table 2

Number and Type of Psychiatric Facility, United States: 1955, 1963, 1971

Facility	1955	1963	1971
State and County Mental Hospitals	275	284	321
Private Mental Hospitals	309	250	158
General Hospitals with Psychiatric Services	530	578	770
Outpatient Psychiatric Clinics	1260	1802	2279
Community Mental Health Centers	—	—	295
Residential Treatment Centers	N.A.	N.A.	344

Source: Division of Biometry, NIMH

Table 3

Persons in Mental Institutions by Race & Sex United States: 1950-1970 (Rates per 100,000 population)

	White Both Sexes	Male	Female	Non-white Both Sexes	Male	Female
All mental hospitals						
1950	404.4	432.7	376.3	446.2	512.4	382.4
1960	342.9	365.1	321.2	416.9	496.3	341.8
1970	202.9	231.2	176.0	287.4	363.0	217.9
State & county hospitals						
1950	350.0	344.2	355.7	398.5	416.6	381.0
1960	295.7	290.2	301.1	359.7	401.0	320.6
1970	162.3	169.0	155.8	240.0	285.6	198.1
Percent decrease						
All mental hospitals						
1950-60	15.2	15.7	14.6	6.6	3.1	10.9
1960-70	40.9	36.7	45.2	31.1	26.9	36.2
State & county hospitals						
1950-60	15.5	15.7	15.4	9.7	3.7	15.9
1960-70	45.1	41.8	48.3	33.3	28.8	38.2

Source: U.S. Bureau of the Census

Table 4

Percent distribution of additions by sex and race, federally funded community mental health centers, United States: 1972-1975

Sex and race	1972	1973	1974	1975
Both sexes	100.0%	100.0%	100.0%	100.0%
White	84.5	83.7	83.8	82.9
All other races	15.5	16.3	16.2	17.1
Males	100.0%	100.0%	100.0%	100.0%
White	84.2	83.6	83.5	82.5
All other races	15.8	16.4	16.5	17.5
Females	100.0%	100.0%	100.0%	100.0%
White	84.9	83.8	84.1	83.3
All other races	15.1	16.2	15.9	16.7

Table 5

Percent Distribution of Additions to Federally Funded Community Mental Health Centers by Color and Sex and Degree of Rurality, United States 1971

Color and Sex	Degree of Rurality			
	All Centers	Non-Rural	Part Rural	Rural
All Additions	100.0%	100.0%	100.0%	100.0%
Male	47.7	47.8	47.2	48.4
Female	52.3	52.2	52.8	51.6
White	78.6	73.4	91.3	90.5
Male	37.3	34.9	43.0	43.9
Female	41.3	38.5	48.3	46.6
Black	16.5	20.4	6.3	8.6
Male	7.9	9.8	3.1	4.0
Female	8.6	10.6	3.2	4.6
Other	4.9	6.2	2.4	0.9
Male	2.5	3.1	1.1	0.5
Female	2.4	3.1	1.3	0.4
Number of Facilities Reporting	192	104	62	26

Table 6

Blacks in Specified Age Groups as Percent of Total Additions by Degree of Rurality, Federally Funded Community Mental Health Centers 1971

Age	Degree of Rurality			
	All Centers	Non-Rural	Part Rural	Rural
All Ages	16.5%	20.4%	6.3%	8.6%
Under 15	20.3	26.3	10.3	11.2
15-19	15.9	19.9	6.8	9.8
20-24	16.7	20.1	5.4	8.7
25-44	16.7	20.7	4.8	7.7
45-64	13.3	16.7	4.9	7.1
65 & Over	15.2	18.5	8.4	9.0
Number of Facilities Reporting	192	104	62	26

Table 7

Number of Discharges and Hospital Days Due to Mental Disorders Indian Health
Service and Contract General Hospitals Fiscal Years 1967-1972

	Fiscal Year					
	1972	1971	1970	1969	1968	1967
Total Number of Discharges	6,017	5,310	4,750	4,631	3,922	3,092
IHS Hospitals	4,662	4,138	3,657	3,665	3,003	2,430
Contract Hospitals	1,355	1,172	1,093	966	919	662
Total Hospital Days	40,521	36,198	26,571	28,501	27,737	19,614
IHS Hospitals	34,666	29,343	22,189	24,630	22,462	16,507
Contract Hospitals	5,855	6,855	4,382	3,871	5,275	3,107

Table 8

Alcoholism Deaths and Death Rates American Indians and Alaskan Natives in 25 Reservation States and U.S. All Races (All States)

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Number of Deaths										
American Indians and Alaskan Natives										
Alcoholism	55	51	91	81	97	107	102	159	164	171
Alcoholic psychoses	5	6	10	7	8	10	8	5	7	4
Cirrhosis of liver with mention of alcoholism	<u>128</u>	<u>126</u>	<u>165</u>	<u>179</u>	<u>167</u>	<u>217</u>	<u>205</u>	<u>235</u>	<u>246</u>	<u>228</u>
Total	<u>188</u>	<u>188</u>	<u>266</u>	<u>267</u>	<u>272</u>	<u>334</u>	<u>315</u>	<u>399</u>	<u>417</u>	<u>403</u>
Alcoholism Death Rates (Deaths per 100,000 Population)										
American Indians and Alaskan Natives										
Alcoholism	8.9	8.0	13.8	11.9	13.8	14.8	13.6	20.7	20.8	20.5
Alcoholic psychoses	0.8	0.9	1.5	1.0	1.1	1.4	1.1	0.7	0.9	0.5
Cirrhosis of liver with mention of alcoholism	<u>20.7</u>	<u>19.7</u>	<u>25.0</u>	<u>26.3</u>	<u>23.8</u>	<u>30.1</u>	<u>27.4</u>	<u>30.5</u>	<u>31.1</u>	<u>27.3</u>
Total	<u>30.3</u>	<u>28.6</u>	<u>40.3</u>	<u>39.2</u>	<u>38.8</u>	<u>46.3</u>	<u>42.1</u>	<u>51.9</u>	<u>52.8</u>	<u>48.3</u>
Alcoholism Death Rates (Deaths per 100,000 Population)										
U.S. All Races										
Alcoholism	1.6	1.5	2.0	2.0	2.1	2.1	2.1	2.2	2.3	NA
Alcoholic psychoses	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	NA
Cirrhosis of liver with mention of alcoholism	<u>4.8</u>	<u>4.8</u>	<u>5.0</u>	<u>5.2</u>	<u>5.5</u>	<u>5.8</u>	<u>6.0</u>	<u>6.0</u>	<u>6.2</u>	<u>NA</u>
Total	<u>6.7</u>	<u>6.6</u>	<u>7.3</u>	<u>7.5</u>	<u>7.9</u>	<u>8.2</u>	<u>8.3</u>	<u>8.4</u>	<u>8.7</u>	<u>NA</u>

Vital Events Branch, OPS/DRC/IHS
December 29, 1976

NA Not available.

Source: Trajectory of Indian Health Care, DHEW, Public Health Service, Indian Health Service, 1977.

Table 9

Percent Distribution and Male to Female Sex Ratio by Nature of Mental Disorder
Indian Health Service and Contract General Hospitals Fiscal Years 1967-1972

Nature of Mental Disorder	Fiscal Year					
	1972	1971	1970	1969	1968	1967
Percent Distribution						
Total	100.0	100.0	100.0	100.0	100.0	100.0
Alcoholism and Drug Dependence ¹	67.7	64.6	65.0	64.5	59.1	55.7
Neuroses and Personality Disorders	16.9	19.4	19.3	20.3	23.0	25.6
Psychoses (Non-organic)	5.9	6.2	5.5	4.9	4.9	6.5
Transient Situational	2.8	3.0	2.4	2.8	2.7	2.9
Organic Brain Syndrome ²	2.4	2.7	3.0	3.2	3.6	3.6
All Others	4.3	4.1	4.8	4.3	6.7	5.7
Male to Female Sex Ratio						
Total	1.5	1.4	1.3	1.3	1.2	1.2
Alcoholism and Drug Dependence ¹	2.9	2.5	2.3	2.5	2.4	2.6
Neuroses and Personality Disorders	0.3	0.4	0.3	0.3	0.3	0.3
Psychoses (Non-organic)	0.7	0.8	0.6	0.5	0.9	0.7
Transient Situational	0.3	0.3	0.3	0.3	0.3	0.4
Organic Brain Syndrome ²	2.3	1.4	1.3	1.4	2.4	1.2
All Others	0.6	0.6	0.7	0.7	0.6	0.5

¹Incl. alcohol psychosis.

²Excl. alcohol psychosis.

Table 10

Annual Rate per 1,000 population of Persons Receiving Psychiatric Care by Socioeconomic Status and Type of Care, 1962-1971, Monroe County, New York

Type of care, socioeconomic status	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
All psychiatric care										
S.E. I—Highest	14.7	15.2	15.9	16.4	15.7	15.5	17.1	18.4	19.7	19.5
S.E. II	11.8	12.3	12.9	13.8	14.0	13.8	15.0	16.2	17.8	17.9
S.E. III	18.5	19.0	19.6	20.0	20.1	20.7	21.4	22.4	23.1	23.8
S.E. IV	28.7	30.6	33.0	33.7	33.7	35.7	38.6	40.6	45.2	43.8
S.E. V—Lowest	25.7	26.1	29.5	32.2	34.3	37.0	41.0	54.3	54.3	54.6
Total	18.4	18.9	19.8	20.4	20.5	20.9	22.2	25.2	25.2	25.1
Inpatient care										
S.E. I—Highest	4.4	4.8	4.6	4.9	5.0	4.8	5.2	4.6	4.6	4.4
S.E. II	4.3	4.2	4.2	4.2	4.4	4.4	4.3	4.3	4.2	4.0
S.E. III	8.7	8.6	8.4	8.4	8.5	8.5	8.1	7.6	7.6	7.4
S.E. IV	16.5	17.0	17.4	16.9	18.2	19.0	19.2	18.0	18.8	18.2
S.E. V—Lowest	13.9	14.4	15.2	16.4	17.2	19.6	20.2	19.4 ^a	19.5	20.2
Total	8.7	8.6	8.6	8.5	8.8	8.9	8.7	8.2	8.1	7.8

Source: Monroe County, New York Psychiatric Case Register; University of Rochester School of Medicine and Dentistry and Strong Memorial Hospital, Rochester, New York.

Table 11

Race Breakdown by Quarter (In Percentages) In Use of Drug Clinics

Race	1975				1976	
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter
White	53.4	52.6	51.6	52.1	51.8	50.7
Black	34.8	35.2	36.1	35.4	35.1	36.2
Spanish American	10.4	10.8	10.8	11.0	11.7	11.8
Other	1.4	1.4	1.5	1.5	1.4	1.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total N	51,762	50,842	53,389	56,844	59,171	55,045

Table 12

Race Breakdown by Quarter for Clients Abusing Opiates (in Percentages)

Race	1975				1976	
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter
White	38.3	38.0	38.3	38.9	38.7	38.6
Black	47.5	47.5	47.6	46.2	45.8	46.0
Spanish American	13.4	13.8	13.1	13.8	14.4	14.4
Other	0.9	0.9	1.0	1.0	1.1	1.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total N	28,175	28,725	31,481	34,263	36,489	35,564

Race Breakdown by Quarter For Clients Abusing Marihuana (in Percentages)

Race	1975				1976	
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter
White	70.0	68.8	67.0	68.5	69.9	69.6
Black	19.2	20.4	20.9	20.1	18.5	19.6
Spanish American	8.4	8.2	9.6	8.6	9.8	8.9
Other	2.4	2.5	2.5	2.8	1.8	1.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total N	8,339	7,816	7,570	6,956	6,314	4,902

Table 12 (Continued)

Race Breakdown by Quarter for Clients Abusing Barbiturates (in Percentages)

Race	1975				1976	
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter
White	82.5	79.8	78.4	79.4	78.8	77.4
Black	11.5	13.9	14.5	13.5	12.2	13.3
Spanish American	4.5	5.1	4.6	4.8	6.6	6.6
Other	1.5	1.2	2.5	2.3	2.4	2.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total N	2,494	2,447	2,367	2,860	2,741	2,575

Race Breakdown by Quarter for Clients Abusing Amphetamines (in Percentages)

Race	1975				1976	
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter
White	87.3	86.1	85.2	82.6	85.0	84.0
Black	8.3	9.7	10.6	11.3	10.7	11.7
Spanish American	2.6	2.8	2.3	4.3	3.2	3.1
Other	1.8	1.4	1.4	1.8	1.1	1.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total N	2,356	2,203	2,143	2,519	2,836	2,555

References

1. U.S. Public Health Service: Statistical Note 116. DHEW Publication No. (ADM) 75-158. Alcohol, Drug Abuse, and Mental Health Administration, 1975.
2. U.S. Public Health Service: Provisional Data on Patient Care Episodes in Mental Health Facilities, 1975. (Memorandum). Division of Biometry and Epidemiology, NIMH, May 18, 1977.
3. U.S. Public Health Service: Indian Health Trends and Services, 1974 Edition. DHEW Publication No. (HSA) 74-12,009. Indian Health Service, Division of Resource Coordination, Office of Program Statistics, Washington, D.C.
4. U.S. Public Health Service: Statistical Note 102. DHEW Publication No. (ADM) 74-6. Alcohol, Drug Abuse, and Mental Health Administration, Rockville, Maryland, 1974.
5. U.S. Public Health Service: Provisional Data on Federally Funded community Mental Health Centers 1975-76. Survey and Reports Branch, Division of Biometry and Epidemiology, National Institute of Mental Health, April 1977.
6. Rosen, Beatrice M.: Mental Health and the Poor: Have the Gaps Between the Poor and the "Non Poor" Narrowed in the Last Decade? Paper presented at the Conference on Social Sciences in Health at the 102nd Annual Meeting of the American Public Health Association Meeting, October 21, 1974.
7. Cannon, Mildred S., and Locke, Ben Z.: Being Black is Detrimental to ones Mental Health: Myth or Reality? Paper presented at W.E.B. Duboise Conference on the Health of Black Populations, Atlanta, Georgia, December 14, 1976.
8. U.S. Public Health Service: Definitions and Distributions of Mental Disorders in A Racist Society. Reprinted with permission from: Racism and Mental Health, University of Pittsburgh Press, Pgh, Pa.
9. Statistical Bulletin, "Mental Retardation," Metropolitan Life Insurance Company, November, 1967, Vo. 48, P. 5.
10. Cleveland, William H., et al. "Outcomes of Methadone Treatment of 300 In-nercity Addicts," Public Health Reports, Vol. 89, No. 6, November - December 1974, pp. 563-568.
11. Statistical Series Quarterly Report, April-June 1976. "Data from the Client Oriented Data Acquisition Process (CODAP), National Institute on Drug Abuse, U.S. Department of Health, Education, and Welfare.
12. The Health of America's Nonwhite Population, Status Report and Future Plans for Dealing with Diseases More Prevalent or Severe in Nonwhites. November 11, 1971. Office of Program Planning and Evaluation, NIH, U.S. DHEW.
13. Indian Health Service, Discharge Summary Fiscal Years 1967-1972. U.S. Dept. of HEW, Public Health Service - Health Services Administration.
14. "Outpatient Psychiatric Services 1971-72." Series A, No. 13, National Institute of Mental Health, Mental Health Statistics, Rockville, Md.
15. "State and County Mental Hospitals, United States, 1973-74" Series A, No. 17, National Institute of Mental Health, U.S. DHEW.
16. National Institutes of Health: Utilization of Mental Health Facilities 1971, Analytical and Special Study Reports, Series B, No.5. DHEW Publication No. (ADM) 76-303, Alcohol, Drug Abuse, and Mental Health Administration, Rockville, Maryland 20852.

List of Tables

Table 1 Number and percent distribution and rate per 100,000 population of inpatient and outpatient care episodes, in selected mental health facilities, by type of facility: U.S., 1955, 1965, 1971 and 1975 (Provisional) **173**

Table 2 Number and type of psychiatric facility, U.S.: 1955, 1963, 1971 **173**

Table 3 Persons in mental institutions by race & sex, U.S.: 1950-1970 (Rates per 100,000 population) **174**

Table 4 Percent distribution of additions by sex and race, federally funded community mental health centers, U.S., 1972-1975 **174**

Table 5 Percent distribution of additions to federally funded CMHCs by color and sex and degree of rurality, U.S. 1971 **175**

Table 6 Blacks in specified age groups as percent of total additions by degree of rurality, federally funded community mental health centers 1971 **175**

Table 7 Number of discharges and hospital days due to mental disorders. Indian health service and contract general hospitals fiscal years 1967-1972 **176**

Table 8 Alcoholism deaths and death rates, Indians and Alaskan Natives in 25 reservation states and U.S. all races (all states) **177**

Table 9 Percent distribution and male to female sex ratio by nature of mental disorder, Indian health service and contract general hospitals, fiscal years 1967-1972 **178**

Table 10 Annual rate per 1,000 population of persons receiving psychiatric care by socioeconomic status and type of care, 1962-1971, Monroe County, New York **179**

Table 11 Race breakdown by quarter (in percentages) **179**

Table 12 Race breakdown by quarter for clients abusing opiates, marihuana, barbiturates, amphetamines (in percentages) **180**

List of Figures

Figure 1 Percent distribution of inpatient and outpatient care episodes in mental health facilities, by type of facility: U.S. 1965 and 1975 **166**

Figure 2 Percent distribution of terminations from outpatient psychiatric clinics, by sex and color, according to diagnostic classification, U.S., 1969 and 1961 **167**

Figure 3 Outpatient Psychiatric Services **168**

Figure 4 Unduplicated additions to the 295 CMHC's operating during 1971 **169**

Figure 5 Number of discharges from IHS and contract hospitals by type of mental disorder fiscal years 1971 and 1976 **170**

Figure 6 Ratios of 1971 to 1962 annual rates of psychiatric care utilization **171**

Figure 7 Utilization of federally funded drug abuse **172**

Chapter IX

Dental Health

Contents

A. Overview	187
B. Introduction	187
Dental Care Services Utilization	188
Use of Dental Services from 1930-1950	188
Use of Dental Services from 1950-1973	188
Decayed, Missing, and Filled Teeth	192
Periodontal Disease	194
Oral Health	194
Edentulism	194
References	201
List of Tables	203
List of Figures	203

Chapter IX

Dental Health

A. Overview

A comparison of the dental health status of advantaged and disadvantaged groups leads to less clear-cut conclusions than are possible with other health problems. In some ways, it appears that the disadvantaged have a lesser health status than the advantaged, and in some ways it appears that the reverse is true, at least for blacks.

Four different measures of health status were analyzed: (a) utilization of dental health services; (b) dental caries; (c) periodontal disease; and (d) missing teeth. All four of these measures indicated that there was a poor dental health status among those of lower income, those of lower formal educational levels, and those residing in rural areas. They varied in their indication of whether or not those in the racial minorities had poorer or better dental health status. All four measures, also, indicated that the disparities are lessening.

Many studies have been conducted on dental health services utilization since 1930. In the last 45 year period, the rates of persons having at least one dental visit the preceding year rose from approximately 30 percent to approximately 60 percent. All of the studies that included these demographic variables showed that utilization rates were substantially higher among whites, women, the higher income, the more highly educated, those living in the more densely populated areas, and those in the Northeast and Far West.

Utilization rates of nonwhites have changed rapidly in the last two decades. Two decades ago, white utilization rates were twice the nonwhite rates. The gap narrowed to 1.7 times the nonwhite rate by 1973. If that rate of increased usage had con-

tinued, the gap will have been almost eliminated by 1980. In tracing the disparity between age groups, it became obvious that those who started utilizing dental services at an early age continued to do so as they advanced in age, slowly wiping out the age-group disparities. It is probably, also, the case that if the persons in the disadvantaged groups started utilizing dental services at an early age, the disparities between their dental utilization rates and those of the advantaged groups would also diminish. Since we have no age-within-racial group breakdown of utilization rates, there is no way of knowing whether that is the means by which the disparity has, indeed, been diminished, and thus whether that diminution is likely to continue.

The PHS Health Examination Survey used actual dentists' examinations of teeth rather than self-reports as data. This should have made the data more accurate than other extant health status data. But the dentists had constraints on their procedures disallowing the use of dental X-rays or other than superficial examination of teeth. We can expect, of course, that their observations of fillings and missing teeth are very accurate. Their measurements of dental caries, however, may have been in error. Given this caveat, the data clearly show that as family income and educational level increase, the mean number of decayed teeth decreases, the number of filled teeth increases radically, and the number of missing teeth first increases and then decreases. As for race, blacks have higher decay rates, particularly among women: lower missing teeth rate, and substantially lower filled teeth rates. Caution is suggested in interpreting the composite DMF rates reported, since almost all

of the composite score differences are attributable to filled teeth.

According to a 1962 survey, as income and education increased, the incidence of periodontal disease was much higher among males than among females. Black females had consistently higher rates than did white females at all income and educational levels; black males had almost identical rates to white males at all educational levels, but much higher rates at the highest income level.

Judgments by examining dentists as to the need for dental care, and thus the oral health status of the U.S. population, varied inversely with income and educational levels. Nonwhites were judged to require dental care at rates over 50 percent above whites.

B. Introduction

An exact gauge of the dental health status of a nation or of a subpopulation within a country is difficult to obtain. A comparative statement is difficult to obtain, because comparable data are not available from other countries. An absolute statement is difficult to make, because there is no way of knowing what the dental health of our nation should be. This becomes more apparent when we look at the metrics that are available for measuring dental health status.

The major dental problems are that either teeth are diseased, the tissues surrounding the teeth are diseased (periodontal disease), or the teeth are missing (edentulism). When the teeth themselves are diseased, the major problem by far is dental caries (i.e. cavities). Although the disease process is the same, dental caries can be measured as an untreated cavity or as a filling, the difference being that in the latter case a non-reversible arrest

of the disease process has taken place (at least temporarily) and that a health care need has been met. As indicated previously, an absolute standard for dental health is difficult to arrive at, since the total absence of these problems is an unrealistic level of dental health and there are no criteria by which the minimal rates for these metrics can be specified. Our analyses of dental health status are, therefore, limited to enumerations of dental health services utilization, the presence of caries, periodontal disease and missing teeth, to shifts in these metrics over time, and to comparisons of these indices between sub-populations. Each of these analytic approaches will be made in the rest of this chapter.

Dental Care Services Utilization

Use of Dental Services from 1930-1950
Information that is available on the utilization of dental services in earlier years is scanty, in comparison with the relatively detailed and sophisticated analysis of more recent data. This is true since very few national agencies outside of the professional associations collected and collated dental statistics prior to 1950. According to Richards, (1), it is estimated that only 20 to 25 percent of the population had visited a dentist during the year 1930. Between the years of 1928 and 1931, an interview conducted by the Committee on the Costs of Medical Care (C.C.M.C.) and the Public Health Service surveyed nearly 9,000 white families located in 130 localities in 18 states (2). Both urban and rural geographic sections were represented in the survey, and the income distribution was relatively similar to the estimated distribution of the general population. This national picture of dental health care among white families produced a utilization rate of 28 percent. However, this rate may be an over-estimation, for it was calculated from the number of dental cases recorded and is thus a duplicated count (i.e. an individual may have had more than one episode of dental problems during the 12 month period of the study and would have been counted once for

each episode). The C.C.M.C. study, also, reported that there were higher utilization rates among women, single persons, and those persons in the higher occupational levels. Persons between 8 and 34 years of age were more likely to have visited the dentist. For sparsely populated areas, the dental visit rates were appreciably lower (22 percent for towns under 4,000 and 16 percent for rural areas). The utilization rates for large and small cities were 31 percent.

In 1935-36, as part of the National Health Survey, a representative sample of the population of Detroit (age 3 and over) was surveyed and it was found that about a third of those interviewed reported a dental visit in the previous year (3). This study resulted in data indicating that almost one-fifth of the sample had never visited a dentist. Many of these were children, but there were still 8 percent of the 25 to 38 year olds who had never been examined or treated by a dentist. Socioeconomic status was found to be a critical variable, with more dental visits in the higher strata. The non-white population made considerably fewer visits to the dental office than their white counterparts. Preventative visits and visits for other than extractions were lower for nonwhites than whites. Professional persons went to the dentist for fillings and gum treatments more frequently than the semi-skilled and skilled who were recorded as having made more visits for extractions.

Use of Dental Services from 1950-1973
Richards (1) has written a review of a number of studies of dental services utilization. All of the studies cited in this section, with the exception of the National Health Survey and the Health Interview Survey of 1969, and the Health Interview Survey of 1975, are also contained in that review. It will be noted that there are some discrepancies among the findings of those studies cited. At least some, and maybe all of the differences between the survey findings, can be explained by methodological differences. Some of the studies have reported findings

on persons of all ages, while others have considered adults only. The series of studies will provide us with at least a clear picture of the trends in utilization rates over time.

Since we are using dental visits as the measurement of utilization, it is necessary to define a visit as used in all of these studies. Any visit to a dentist for treatment or advice is considered a dental visit, as is any visit for services provided by a technician or dental hygienist acting under a dentist's supervision.

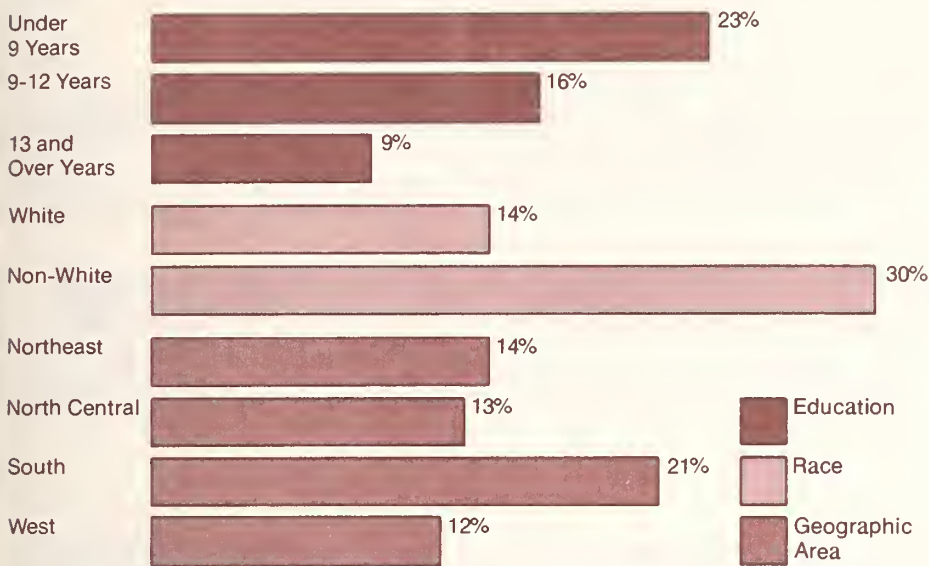
The American Dental Association (ADA) in 1949, 1952, 1955, and 1958 surveyed a number of dental patients and made estimates of utilization rates (4). Based on the number of dentists replying to the ADA survey, (these replies were based on questionnaires filled out by the responding dentists' patients), it was estimated that in the four years studied, 40, 42, 45, and 47 percent, respectively, of the American population received dental care. Although these data report slightly higher utilization rates than do some surveys of the public, they probably represent accurately the increase in the use of dental services over the time period measured. The figures in the 1949 ADA study are closely approximated by those of a Gallup survey taken in 1950 which estimated that 37 percent of the population had been to a dentist within the year (5).

The National Opinion Research Center on behalf of the Health Information Foundation (HIF) undertook surveys in 1953, 1958, and 1963 to measure family medical care expenditures (6, 7, 8, 9). Included in the questionnaires on expenditures were a number of questions related to the utilization of dental services. Their survey, also, showed that the proportion of persons visiting the dentist at least once during the previous year increased from 34 percent in 1953 to 37 in 1958, and 38 in 1963. The survey findings also showed that older children (6 to 17 years of age), young adults (18 to 34 years of age), and women were more likely to have received dental care. The proportion

Dental Visits

Percent of Dental Visits During Which an Extraction was Performed, by Education of Family Head, Race and Geographic Area (U.S.A., July 1963-June 1964).

Figure 1.



Percent of Visits With Extractions

Source: U. S. National Center for Health Statistics, "Volume of Dental Visits: United States, July 1963-June 1964," Public Health Service Publication No. 1000, Series 10, No. 23 (Washington, D. C., October 1965), Tables 14, 18, 21, pp. 29, 33, 36.

of persons from families with incomes of less than \$2,000 had utilization rates of 16 percent while persons with incomes greater than \$12,500 in 1963 had utilization rates of 60 percent.

As part of the National Health Survey in 1957-58, 1963-64, and in 1969, statistics on the volume of dental visits and the time interval since the last dental visit were collected (10). During the period July 1957 to June 1958, 37 percent of the population said they had visited the dentist. In the 1963-64 survey, 43 percent of the population reported going to the dentist within the year. Additionally, data from the 1963-64 survey corroborates the previously discussed findings of the NHS 1935-36 data from a sample of the population of Detroit (3). Both data sets show that the number of dental visits for extractions was greater for the nonwhite population (Figure 1).

During 1969, about 45 percent of the non-institutionalized civilian population of the United States made at least

one dental visit during the previous year. During 1969, there were an estimated 293.3 million dental visits, an annual average of 1.5 visits per person in the population. The two earlier surveys showed (a) about twice as many white persons had been to a dentist than nonwhite persons; (b) as level of income increased, and the length of education increased, so did the tendency to visit a dentist; and (c) those living in metropolitan areas were more likely to have made a dental visit than those in less densely populated areas.

The findings from the 1969 survey indicated that the number of dental visits per person per year was the highest in the 5 to 24 year old age group. The number of annual dental visits per person was higher for females than for males, and the rates were higher for white persons than for nonwhite persons. The number of dental visits per person was highest in the largest family income category which was \$15,000 or more. The utilization rate

increased as the education of the head of the family increased. The largest number of dental visits per years was shown to be among residents of metropolitan areas and were higher for the residents of the Northeast and Western regions of the United States than for the North Central and Southern regions. Table 1 presents the number of dental visits and the number of dental visits per person per year by color, sex, and age for 1969.

According to Wilson (1974) between 1964 and 1973, the number of dental visits increased only slightly, if at all, for all income and racial groups. (Figure 3, Table 2). As of 1973, the non-poor had 60 percent more visits on the average than the poor, and within the same income groups, whites had a 75 percent higher number of visits than the racial minorities.

The National Opinion Research Center (N.O.R.C.) undertook four surveys, during the time period 1955 to 1968, that focused their attention on utilization of dental services. These are distinct from the N.O.R.C. studies that dealt with expenditures but, also, provided some utilization data. In 1955, they conducted a survey for the Health Information Foundation (12). In 1959, the Commission on the Survey of Dentistry sponsored N.O.R.C. in a study of public attitudes and practices in the field of dental care (13, 14). In 1965 and 1968, the Division of Dental Health of the Public Health Service sponsored studies on the utilization of dental services as the third and fourth studies in this series of surveys (15). The first of these surveys in 1955 reported that 49 percent of adults had been to the dentist in the previous year. In the 1959 survey, 46 percent of the adults surveyed said they had been to a dentist within a year. Persons with college education (70 percent) and persons with an income of \$7500 or more (64 percent) had higher utilizations for dental services than did those in the other population groups. Those persons with elementary school education, or no schooling, had 28 percent utilization rates and those persons with incomes

under \$2,000 had 21 percent utilization rates.

Two surveys of the attitudes, beliefs, and behaviors concerning dental health were conducted in the fall of 1965, and in the spring of 1968, by N.O.R.C. In 1965, 46 percent of the population surveyed said that they had gone to the dentist within a year, 19 percent said between 1 and 2 years ago, 8 percent said between 2 and 3 years ago, and 26 percent said it was over 3 years since they had made a dental visit. One percent had never made a dental visit. Those persons with a high school education or more were more likely to have made a dental visit than persons who had elementary school education or less. Twenty-two percent of persons with elementary school education had been to a dentist as compared with 49 percent of high school graduates and 74 percent of persons with post graduate or professional training. As the socioeconomic scale climbed, the number of persons who had received dental treatment, also, climbed. Of persons earning \$2000 or less, only 16 percent had made a dental visit as compared with 76 percent of those persons earning \$15,000 or more. Nearly half of the white population and one-third of the nonwhite population had been to a dentist. Persons living in rural areas were less likely to have made a dental visit than those living in more highly populated areas. The 1968 study showed similar distributions with an increase of 2 percent of overall dental services utilization.

Several local studies discussed by Richards (1) further emphasize the fact that going to the dentist in the United States is effected by one's age, sex, education, income, occupation, race, community size, and geographical area. A study conducted by Suchman and Rothman (16) reported that 44 percent in a representative sample of Washington Heights, New York City had visited a dentist within the year. When an individual's income, occupation, and education were combined into a measure of socioeconomic status, it was shown that 61 percent of

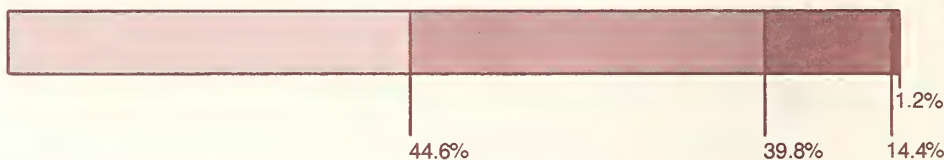
Dental Visits

Dental Visits by Race, Education, Income and Residence

Figure 2.

Percent Distribution of Persons, by Time Interval Since Last Dental Visit According to Race.

White



Non-White



Percent Distribution of Persons, by Time Interval Since Last Dental Visit According to Family Income.

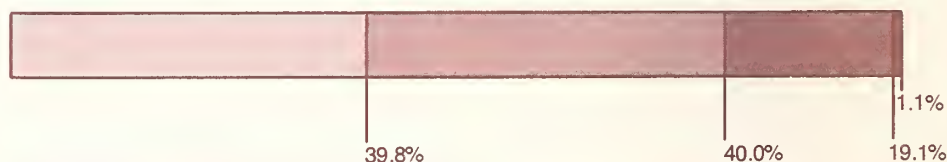
Under \$2,000



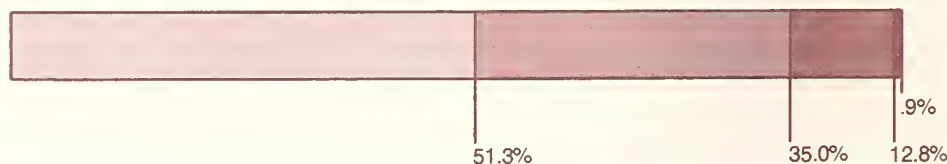
2,000-3,999



4,000-6,999



7,000-9,999



10,000 and Over



Percent Distribution of Persons, by Time Interval Since Last Dental Visit According to Education of Head of Family.

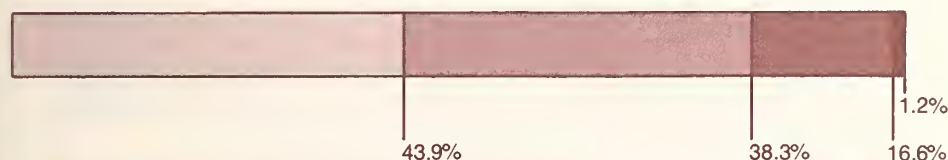
Under 5 Years



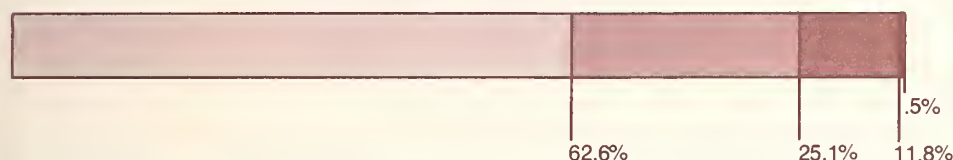
5-8 Years



9-12 Years

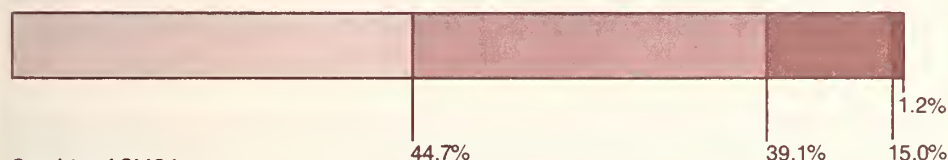


13 Years and Over

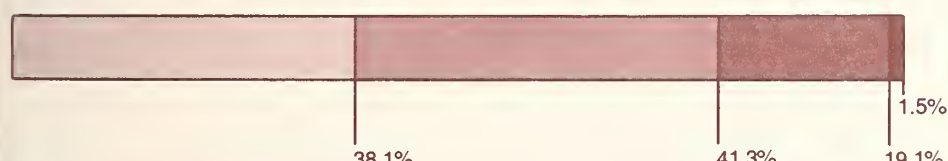


Percent Distribution of Persons, by Time Interval Since Last Dental Visit According to Residence.

SMSA



Outside of SMSA
Nonfarm



Farm



Under 1 Year 1 Year and Over Never Unknown

the upper, 52 percent of the middle upper, 38 percent of the middle lower, and 27 percent of the lower classes visited the dentist. This same study showed that women and younger persons made visits to the dentist more often than the general population. White persons were reported having made more visits than either Puerto Ricans or blacks.

Analysis of patterns of the use of dental services through group dental health insurance in New York City showed that the higher the occupational level, the higher the utilization rate for dental care. Semi- or unskilled workers and their families visited the dentist at a rate of 27 persons per 100 person, clerical workers at the rate of 45, and professionals at the rate of 58 (17, 18).

Richards believes that a key factor in the explanation of the reasons for utilization and non-utilization of dental services is an individual's awareness of his need to seek treatment. Socioeconomic status as measured in several studies by educational level and amount of family income was very much related to the number of preventive visits and the number of visits for treatment. A study by Freidson and Feldman surveyed a national sample of persons and asked for a reply to the question "How is it you don't see a dentist more often?". Thirty-six percent of the sample said it was because they had dentures or no teeth; 27 percent said either that their teeth were O.K. or they had no need for dental services; 16 percent gave a response indicating negligence or laziness; 14 percent gave financial reasons; and 9 percent said they were afraid of pain (12).

Some additional insight into this matter of why some people do not utilize dental services can be gained by focusing on a shift that appears to be occurring with respect to the age variable. Figure 4 presents NHS and HIS data by age over a recent decade. From that figure, we can see that the growth in utilization for the younger age groups was non-existent (0.7 percent for the 7-24 age bracket) and slight (3.4 per-

cent for the 25-44 age bracket), while it has been considerable (12.2 percent for the 45-64 age bracket) and steep (29.8 percent for the 65 and older age bracket) for the older aged groups. The most probable explanation of this shift is that utilization of dental health services represents a health behavior that, if acquired early, persists throughout life. Thus, the increase seen in the older age brackets is probably due to people continuing to use health services as they grow older. If this is the case, the utilization differences in the age groups will probably continue to wane and may disappear.

Similar data are not available from these sources for an analysis of changes in utilization patterns among races for all three data points. For the surveys conducted in 1963-1964 and 1969, the data show some convergence. The proportion of white persons who had a dental visit within one year rose from 57.4 percent to 59.0 percent, which is a rise in only 2.8 percent over the base rate, while nonwhite rates went from 33.9 percent to 40.4 percent, which is an increase of 19.2 percent over the base rate.

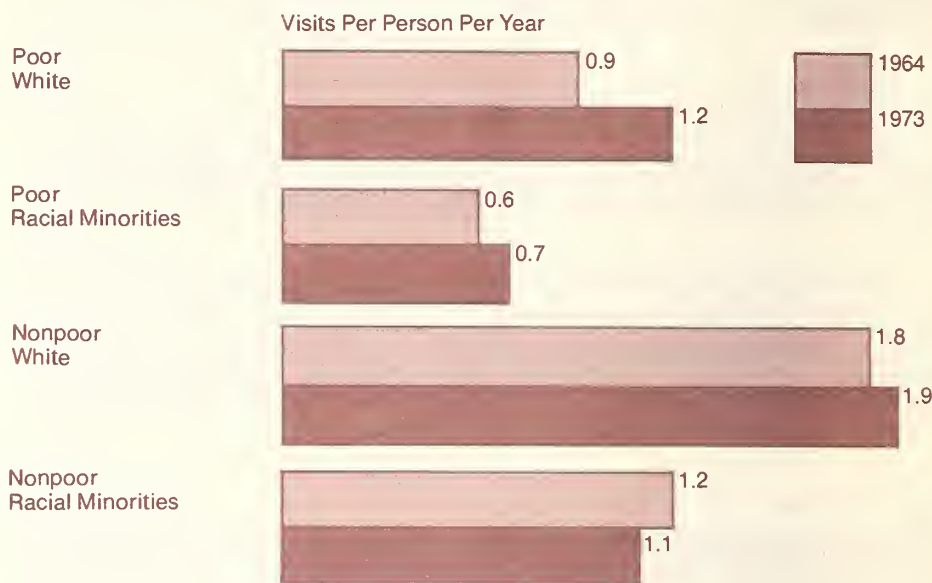
In summary, two major points need to be made. First, Table 3 summarizes the data cited in all of the studies reported above. From that array, it can be seen that the results, between and within the methodologies employed, indicate a national trend for increased usage of dental services over time, with usage doubling over the 45 year time period.

Second, there are some definite demographic concomitants to dental services utilization that have shown up in each of the surveys that probed such relationships. These studies have shown that there is a greater utilization of services by the young, the whites, women, the higher income, the more highly educated, those living in the more densely populated areas, and those living in the Northeast and the far West. It has been posited that utilization seems to be more tied in with psychological factors associated with the above than it is to access. If

Dental Visits

Number of Dental Visits Per Person Per Year by Poor and Nonpoor Status and by Race: U. S. 1964 and 1973

Figure 3.



Note: The definition of Poor and Nonpoor are based on family income

	Poor	Nonpoor
1964	under \$3000	\$3000 and over
1973	under \$6000	\$6000 and over

Source: Wilson, Ronald W. and Elijah L. White, "Changes in Morbidity, Disability and Utilization Differentials Between the Poor and Nonpoor; Data From The Health Interview Survey: 1964 and 1973." Paper given at the annual American Public Health Association meeting 1974.

this is the case, then improving access through either facility developments or through reimbursement programs must be accompanied by a health education and incentive program, if any impact on utilization is likely to be achieved. Disparities in utilization rates between persons who differ in age, race, and income seem to be lessening.

Decayed, Missing, and Filled Teeth

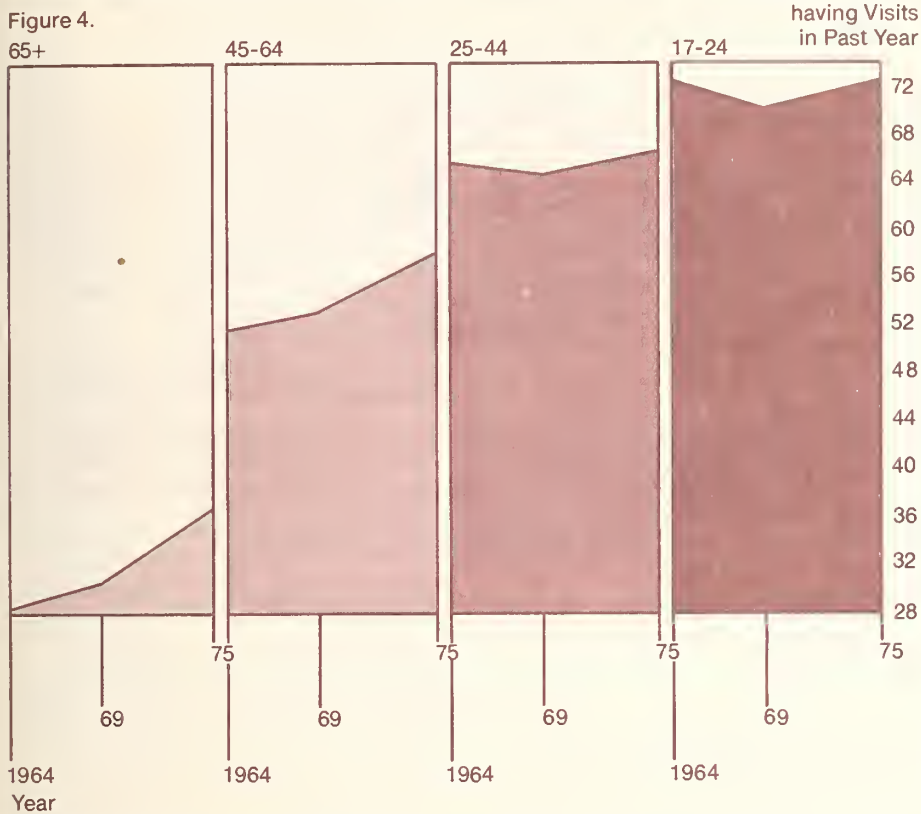
As indicated previously, decayed, missing, and filled teeth are some measures of health status, but it is only with some difficulty that those measures can be used. The definition of filled teeth includes under that rubric crowns that may have been used because of caries, trauma, or need for cosmetic improvements. Dental caries may be undetected and rates may be underestimated for any population subgroup with low dental services utilization. When caries are reported,

they mostly denote the same health condition as filled teeth, but they occur in persons who have not had any restorative dental services rendered to those teeth. Missing teeth among dentulous persons may have resulted from dental caries, trauma, or dental treatment to a healthy tooth, because of other dental problems such as those associated with orthodonture. Although the following discussion centers around group differences which result from the employment of these indices, because of the points just raised, there is some question as to whether those differences exist, what their time amplitude is, and what explanations can be advanced for them.

Data from the 1960-62 Health Examination Survey (Figure 4) show that in those survey years, whites had higher DMF scores than blacks. Filled teeth comprise the greatest portion of the differential between the two

Dental Services

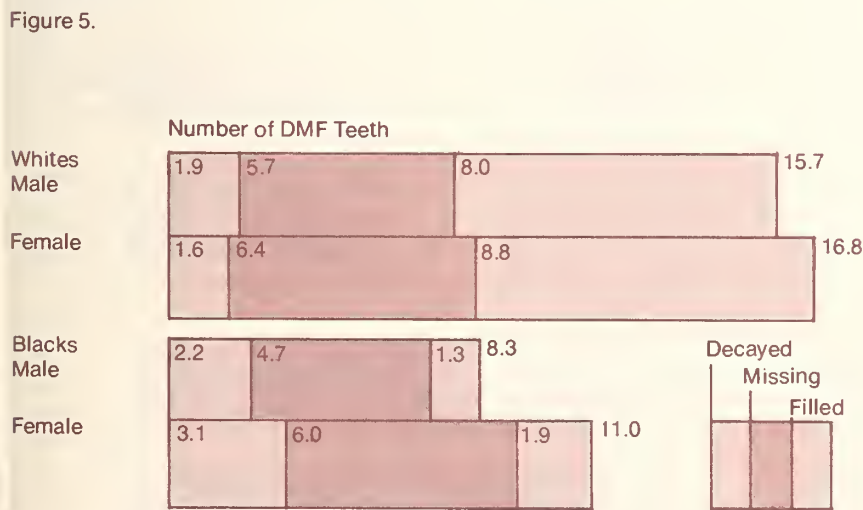
Increased Dental Services Utilization by Age. Percent of Persons having Visits in Past Year.



Source: (1) USDHEW "Dental Visits, Time Interval Since Last Visit, U. S., July 1963-June 1964." Series 10, No. 29. (2) USDHEW "Dental Visits, Volume and Interval Since Last Visit, U. S., 1969." Series 10, No. 76. (3) USDHEW "Current Estimates, Health Interview Survey, U. S., 1975." Series 10, No. 115.

Teeth Condition – Race and Sex

Mean Number of Decayed, Missing, and Filled (DMF) Teeth Among Dentulous Adults 18-34 Years of Age by Race and Sex, U. S. 1960-62



Note: Filled teeth include only teeth with satisfactory fillings. Decayed teeth include not only teeth with caries but also teeth with carious fillings. Missing teeth include both missing and nonfunctional teeth. D.M.F. is the total of these three categories.
Source: DHEW, Decayed, Missing, and Filled Teeth in Adults, U. S., 1960-1962, National Center for Health Statistics, Series 11, No. 23, February 1967. Table 22.

populations. As indicated above, large numbers of filled teeth are indicative of both dental caries and of appropriately frequent professional dental care.

From a socioeconomic standpoint, DMF scores were observed to increase with higher incomes and educational attainment (Table 3). As in the prior example between races, the most significant factor causing the differentials was the variable of filled teeth. This finding took its most extreme form for men at the upper and lower ends of educational achievement. Men with less than 5 years of education had 0.6 filled teeth, while those with 13 years or more of education had 10.7.

Numerous local studies reviewed by Richards and Barmes (19) reported on the dental health of children in rural and urban areas. Potgieter, Morse, Erlenback and Dall (20) reported that in Connecticut rural children had a slightly lower DMF rate than city children. Bixler (21) studied school children aged 6-15 in Indiana, and found carious teeth predominated in the rural children, while there were more missing teeth among city children. Children in rural areas had a higher initial caries attack rate, but, with increasing age the urban children quickly caught up and eventually reached a much higher rate. In general, the prevalence of caries was lower in the rural than in the urban communities, but services were more available in urban areas. Hence, untreated caries was likely to be higher in rural communities.

The findings for the DMF scores by race and socioeconomic standing should be interpreted with care. The disparity is due mostly to caries and may be an artifact of the observation procedure. If not, then explanations must be addressed with care. Presumably, black individuals and the lower socioeconomic groups were equivalently exposed to foodstuffs associated to tooth degradation (i.e., sugar and starches) as their advantaged counterparts. It is difficult to assume that their habits of oral hygiene were significantly better. A

possible explanation for the relatively good DMF experience of the disadvantaged may lie in the area of genetics. As indicated earlier, susceptibility to tooth decay has been hypothesized as being associated with the physical attributes of the teeth and mouth. Thus, the black population may have dental genetics that serve to decrease their susceptibility to tooth decay. As significant portions of the lower socioeconomic groups are comprised of black individuals, it is conceivable that it was their dental experience that gave rise to the discrepancy.

Periodontal Disease For the population of adults over the age of 35, periodontal disease has been found to be the most significant factor in the loss of teeth. That cluster of diseases is generally associated with the deterioration of the tissue matter which serves to anchor the teeth. The severity of this disease varies from a mild inflammation of the supportive tissue to a general destruction of the dental foundation materials, including the bone matter adjacent to the tissue. In advanced stages of periodontal diseases, tooth loss is inevitable.

The causes of periodontal diseases remain unknown. It is suspected however that mouth bacteria and the presence of calculus play significant roles in this regard. This assumption is partially supported by the studies that have demonstrated a diminished periodontal pathology with increased levels of oral cleanliness (22).

Periodontal disease has been found to increase with age and is more prevalent among the black population than among whites (Table 4). Additionally, its severity varies inversely with socioeconomic factors (Table 5). Interestingly, the age-adjusted data indicated negligible differences between races at several income levels. This suggests that socioeconomic factors may be important in establishing the white-black differentials with respect to periodontal disease. McMillan and Wolff (22) cited several studies that were in agreement with this assumption.

A number of surveys of children have found that the severity of periodontal disease increases with low SES and decreases with high SES (19). Mobley and Pointer found this among young Blacks in Tennessee (23). Mobley and Smith using occupation, income, and education to form a composite rating, showed that low periodontal scores tended to occur in persons of high SES and high periodontal scores in persons of low SES (24). In Indiana, Moore, Muhler, and McDonald found that persons of high SES exhibited better gingival health (25). Russell and Ayres observed that in Birmingham, Alabama, persons in less favoured occupational groups had higher periodontal scores than persons in occupations with more prestige and higher salary levels (26). They suggested that the higher prevalence noted in the black population reflected SES rather than racial factors.

Income, a key index for most evaluations of SES, has been studied as a separate variable by several investigators. Mobley and Smith have, however, suggested that social factors are more dominant than economic factors in differentiating between groups with high and low periodontal scores (24). The U.S. National Health Survey, 1960-1962, related periodontal scores to five income-levels and found that persons whose families had high incomes had significantly lower rates of periodontal disease than persons from poorer families. In general, the lower the income, the greater the amount of periodontal disease present. Poorer oral hygiene was found to be more prevalent among groups of lower income. The U.S. National Health Survey, also, showed that as the level of educational attainment rose, periodontal scores became progressively lower. Income and education were independently associated with periodontal disease, with income reflecting an ability to purchase care, and education implying a greater awareness of what care meant. Similarly, poorer oral hygiene was most frequently found in persons with below-average education. Oral hygiene was found to be more

closely related to education than income (27).

The greater inclination of the middle and upper socioeconomic classes to take preventive health action undoubtedly plays a role in their favorable experience with periodontal disease. Relative to their disadvantaged counterparts, it is likely that they practice a higher level of oral hygiene (i.e., tooth brushing). As noted earlier, periodontal disease appears to be inversely related to oral cleanliness.

Oral Health. The technique utilized by the National Health Examination Survey to determine the state of its subjects' teeth was based on the judgment of a dental examiner on the need for dental care. Figure 5 conveys that appreciable segments of our population were determined to require dental care at an early date. This judgment varied in frequency inversely with income and level of education. Nonwhites were assessed to require dental care at a rate more than 50 percent greater than that of whites (28).

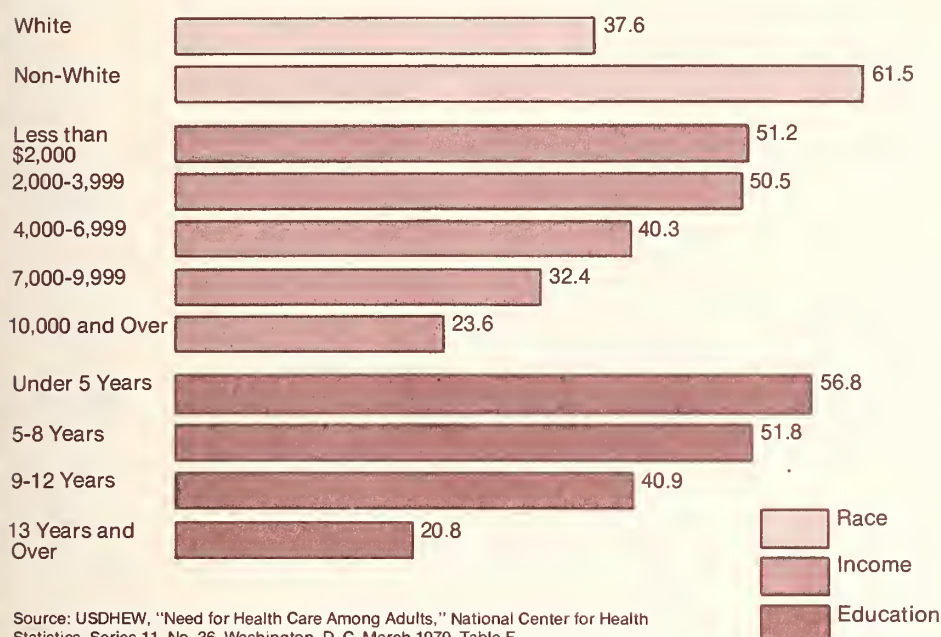
The judgment that an individual should see a dentist at an early date has a high subjective component. However, its basis is assumed to derive from an observation of three dental indicators: (1) decay formation, (2) periodontal condition, and (3) the state of oral cleanliness. As the low income and nonwhites were shown to have had favorable experiences with tooth decay, it is presumed that the latter two factors were significant in yielding their high requirement for dental care.

Edentulism. A person with a total loss of teeth is called edentulous. This condition increases with advancing age and occurs in approximately half of the population over the age of 65. It is more prevalent among the white population than black (Figure 7), and it decreases as socioeconomic standing increases (Table 7). The finding that individuals of low income and education suffer disproportionately from this malady is somewhat expected from the prior determinations of this section. They are found to have high susceptibility to the more severe forms

Dental Visits

Percent of Edentulous Adults Who Should See A Dentist at an Early Date by Race, Income Level and Education, U. S. 1960-1962.

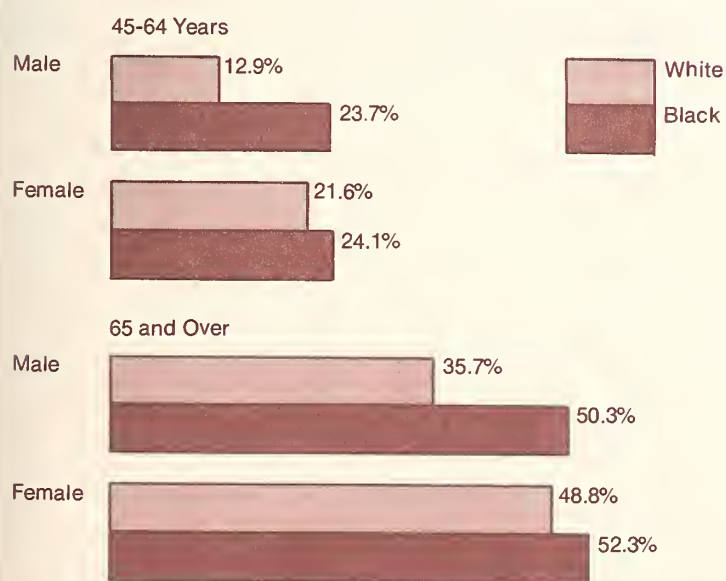
Figure 6.



Edentulous People

Percent of Persons Who Are Edentulous by Age, Sex and Race U. S. 1971

Figure 7.



Source: USDHEW "Edentulous Persons, U. S. 1971 National Center for Health Statistics, Series 10, No. 89, June 1974, Table 10, p. 10.

of periodontal disease, which is the most important factor in tooth loss after the middle years of life (27).

Based on dental examinations conducted during 1960-62, an estimated 20 million adults had lost all their natural teeth. Of the remaining adults with at least one natural tooth (approximately 90 million), about half had at least 18 decayed, missing, or filled teeth. In addition, about three-fourths of those with natural teeth had periodontal disease, and about one-fourth had an advanced form of periodontal disease with pocket formations (30).

In 1971, there was a higher proportion of edentulous persons among whites than among blacks. Table 8 shows for 1958 and 1971 that the proportions of the population 45 years old and over who were edentulous. In the earlier survey, both male and female whites had higher age-specific edentulous rates than did nonwhite persons. The reduction in the rates that occurred for whites between 1958 and 1971 did not occur for persons of all other races (29).

According to the 1971 National Health Survey, as family income increased, the proportion of persons who had lost all their natural teeth also decreased. In each age group over 25 years, the percentage remained the same or decreased as educational level increased. The percent of edentulous persons, by family income and level of education for persons aged 45-64, and 65 years of age and older, is presented in Table 9. For all three income levels, the percentage decreased as educational level increased. Within each level of education, the percentage decreased as the level of family income increased. "In the age group 45-64, 36.9 percent of the persons with less than 9 years of education and a family income of less than \$5,000 had lost all their natural teeth. In this same age group, only 12.1 percent of the individuals with 12 or more years of education and family income of \$10,000 or more were edentulous. Even for persons 65 and over, only three out of 10 individuals who had 12

or more years of education and a family income of \$10,000 or more were edentulous." (29)

There was also a relationship between edentulism and utilization of dental health services. The majority of the edentulous population (60.5 percent) had not seen a dentist within the past 5 years. About half of all persons in the United States who had not seen a dentist within 5 years were edentulous (29).

The lower proportion of edentulous adults among the black population relative to the white experience is somewhat inexplicable. Though blacks were shown to have greater resistance to tooth decay, their demonstrated lower levels of periodontal health and oral health would seemingly enhance the probability of total loss.

Table 1

Number of dental visits and number of dental visits per person per year, by color, sex, and age: United States, 1969

Sex and age	Total	White	All other	Total	White	All other
Both Sexes	Number of visits in thousands			Number of visits per person per year		
All ages	293,337	275,841	17,496	1.5	1.6	0.7
Under 5 years	5,267	5,089	*	0.3	0.3	*
5-14 years	74,759	69,949	4,810	1.8	2.0	0.8
15-24 years	56,340	52,765	3,575	1.7	1.9	0.8
25-44 years	74,053	68,950	5,103	1.6	1.7	1.0
45-64 years	63,899	60,808	3,091	1.6	1.6	0.8
65 years and over	19,018	18,278	*	1.0	1.1	*
Male						
All ages	130,214	122,645	7,568	1.4	1.5	0.7
Under 5 years	2,801	2,703	*	0.3	0.4	*
5-14 years	36,612	34,207	2,405	1.7	1.9	0.8
15-24 years	24,306	22,933	1,373	1.6	1.7	0.7
25-44 years	31,465	29,561	1,904	1.4	1.5	0.8
45-64 years	27,431	26,087	1,344	1.4	1.5	0.7
65 years and over	7,598	7,154	*	1.0	1.0	*
Female						
All ages	163,123	153,195	9,928	1.6	1.7	0.8
Under 5 years	2,466	2,387	*	0.3	0.3	*
5-14 years	38,147	35,742	2,405	1.9	2.1	0.8
15-24 years	32,034	29,832	2,202	1.9	2.0	1.0
25-44 years	42,588	39,389	3,199	1.8	1.9	1.1
45-64 years	36,468	34,722	1,747	1.7	1.8	0.8
65 years and over	11,420	11,125	*	1.1	1.1	*

[Dates are based on household interviews of the civilian, noninstitutional population.]

Source: U.S. National Center for Health Statistics. Dental Visits Volume and Internal Since Last Visit: U.S. 1969. Public Health Service, Series 10, No. 76 (Rockville Maryland July 1972 Table 3)

Table 2

Number of Dental Visits per Person per Year by Poor and Nonpoor Status, Race, and Age: U.S.
1964 and 1973

Age and Year	Total		White		Racial Minority	
	Poor	Non-poor	Poor	Non-poor	Poor	Nonpoor
All Ages						
1964	0.8	1.8	0.9	1.8	0.6	1.2
1973	1.1	1.8	1.2	1.9	0.7	1.1
Under 17 years						
1964	0.6	1.6	0.7	1.6	0.4	1.1
1973	0.8	1.8	1.1	1.9	0.5	0.8
17-44 years						
1964	1.2	2.0	1.3	2.1	0.9	1.3
1973	1.4	1.7	1.5	1.8	1.1	1.3
45-64 years						
1964	0.8	1.9	0.8	2.0	0.6	1.5
1973	1.2	1.9	1.3	1.9	1.0	1.6
65 years and over						
1964	0.6	1.1	0.6	1.1	*	*
1973	0.9	1.5	1.0	1.6	*	*

Note: The definition of Poor and Nonpoor are based on family income:

	Poor	Nonpoor
1964	under \$3000	\$3000 and over
1973	under \$6000	\$6000 and over

Source: Wilson, Ronald W. and Elijah L. White, "Changes in Morbidity, Disability and Utilization Differentials Between the Poor and Nonpoor; Data From The Health Interview Survey: 1964 and 1973." Paper given at the annual American Public Health Assoc. meeting, 1974.

Table 3

Comparison of Studies Reporting Dental Services Utilization Data*

Study Con- ducted By**	Years(s) in Which Study was Conducted																		
	< 1930	1928- 1931	1935- 1936	1949	1949- 1951	1950	1952	1953	1954	1955	1957- 1958	1958	1960	1963	1963- 1964	1965	1968	1969	1975
Rich- ards	20																		
(Esti- mate)	25																		
CCMC	28																		
Nat'l Hlth. Survey			33								37				43			45	
ADA				40			42			45		47							
HIF								34				37		38					
GALLOP						37													
NORC										49			46			46	48		
HIS																		61	
KOOS									36										
Larson & Sutton					29														
					38														

*Entries are percentages of respondents having at least one dental visit within the year reported

**See Text for identification of Source

Table 4

Mean Number of Decayed, Missing, and Filled Teeth Among Dentulous Adults Aged 18-34 Years by Family Income and Sex 1960-62

Family Income	Men				Women			
	Total DMF Teeth	Decayed	Missing	Filled	Total DMF Teeth	Decayed	Missing	Filled
Under \$2,000	13.1	3.1	5.0	5.0	13.1	1.6	5.8	5.7
\$2,000-\$3,999	14.4	2.4	5.4	6.6	14.7	2.8	6.4	5.4
\$4,000-\$6,999	16.0	2.0	6.1	8.0	17.6	1.4	6.9	9.4
\$7,000-\$9,999	16.9	1.3	6.1	9.5	18.9	1.2	6.5	11.2
\$10,000 or More	16.5	1.4	4.6	10.5	18.5	0.7	6.1	11.7

Mean Number of DMF Teeth Among Dentulous Adults Aged 18-34 Years by Education and Sex, U.S. 1960-62

Education	Men				Women			
	Total DMF Teeth	Decayed	Missing	Filled	Total DMF Teeth	Decayed	Missing	Filled
Under 5 Years	7.6	3.4	3.6	0.6	10.1	2.9	5.2	2.0
5-8 Years	13.6	2.5	7.3	3.8	14.2	2.7	8.3	3.3
9-12 Years	16.2	2.4	6.2	7.6	17.3	1.7	6.7	9.0
13 Years or More	16.0	0.9	4.4	10.7	17.3	0.8	4.9	11.5

Source: USDHEW, "Decayed, Missing, and Filled Teeth in Adults, U.S. 1960-62, Tables 23 and 24, pp. 35-36

Table 5

Average Periodontal Index of White and Black Adults by Sex and Age, U.S., 1960-62

Average Periodontal Index*	Sex and Age			
	White		Black	
	Male	Female	Male	Female
Both Sexes				
Total 18-79 Years	1.28	0.85	1.79	1.43
18-24 Years	0.58	0.46	0.78	0.62
24-34 Years	0.87	0.53	1.30	0.95
35-44 Years	1.22	0.74	1.67	1.30
45-54 Years	1.55	1.11	2.06	1.92
55-64 Years	2.00	1.39	3.13	2.90
65-74 Years	2.47	1.51	2.83	2.03
75-79 Years	3.01	2.41	2.16	5.53

Periodontal Index is a quantitative assessment of the severity of Periodontal disease—it ranges from 0 to 8. Severity of disease varies according to the following schedule: 1) 0-0.1, normal, 2) 0.1-1.0, clinically diagnosed disease, 3) 0.5-1.9, severe to destructive disease, 4) 1.5-5.0, established destructive disease, 5) 4.0-8.0, disease to terminal stages.

Source: USDHEW, "Periodontal Disease in Adults, U.S., 1960-62, National Center for Health Statistics, Series 11, No. 12, Washington, D.C., November 1965, Table 3

Table 6

Mean Periodontal Index by Sex, Race, Family Income and Education, U.S. 1960-62

Family Income and Education	Periodontal Index			
	Males		Females	
	White*	Black	White*	Black
Family Income				
<\$2,000	1.99	2.03	1.27	1.66
\$2,000-\$3,999	1.66	1.61	1.10	1.33
\$4,000-\$6,999	1.25	1.70	0.76	1.26
Education				
<5 Years	2.89	2.71	1.79	1.82
5-8 Years	1.91	1.80	1.20	1.76
9-12 Years	1.04	1.17	0.67	1.22

*Adjusted to the Age distribution of Black Men or Women in the same income or education group

Source: USDHEW, "Periodontal Disease in Adults, U.S. 1960-62", National Center for Health Statistics, Washington, D.C., Series 11, No. 12, Table 9, p. 19

Table 7

Percent Edentulous Persons by Income Level and Age, U.S. 1971

Age, Years	Family Income(\$)						
	<3,000	3,000-4,999	5,000-6,999	7,000-9,999	10,000-14,999	15,000 or More	All Incomes
All Ages	25.7	18.1	11.9	9.7	7.0	5.2	11.2
Under 25	*	*	*	*	*	*	0.1
25-44	7.9	8.0	7.6	7.7	5.8	3.7	6.3
45-64	33.5	32.4	28.0	27.4	20.7	11.7	23.3
65 or More	58.5	53.2	46.2	47.3	42.0	35.2	50.7

Percent of Edentulous Persons by Educational Level and Age U.S. 1971

Age, Years	Educational Level				
	All Levels	<9 Years	9-11 Years	12 Years	13 Years or More
All Ages (Yrs.)	11.2	36.9	17.6	11.1	5.9
Under 25	0.1	*	*	0.5	*
25-44	6.3	11.3	11.4	6.1	1.6
45-64	23.3	34.3	28.7	19.0	10.6
65 or More	50.7	58.0	51.1	42.4	30.8

Source: USDHEW, "Edentulous Persons", U.S. 1971, National Center for Health Statistics, Rockville, Md., June, 1974, Tables 3 and 4.

Table 8

Percent of white and all other edentulous persons 45 years and over in the population, by sex and age: United States, July 1957-June 1958 and 1971

Sex and age	White		All other ¹	
	July 1957-June 1958	1971	July 1957-June 1958	1971
Percent				
Both sexes				
45 years and over	39.4	32.7	23.3	24.1
45-64 years	30.3	23.9	17.0	17.2
65 years and over	60.6	51.4	43.1	42.9
Male				
45 years and over	37.4	31.5	19.3	18.7
45-64 years	29.3	23.7	13.5	12.4
65 years and over	57.3	50.3	37.5	35.5
Female				
45 years and over	41.3	33.8	27.1	29.1
45-64 years	31.3	24.1	20.3	21.3
65 years and over	63.3	52.3	48.2	48.7

¹Figures for Black persons have been combined with those for persons of races other than white to facilitate comparison between the 1971 estimates and those obtained in the July 1957-June 1958 survey.

Source: USDHEW: Edentulous Persons United States—1971, National Center for Health Statistics, Rockville, Md. June 1974, Table B

Table 9

Percent of edentulous persons aged 45 years and over in the population, by family income, age, and educational level of the individual: United States, 1971

Age and educational level	Family income			
	All incomes ¹	Less than \$5,000	\$5,000-\$9,999	\$10,000 or more
Percent				
45-64 years				
Total ²	23.3	32.9	27.7	16.3
Less than 9 years	34.3	36.9	34.3	30.1
9-11 years	28.7	33.9	30.4	24.9
12 years or more	15.9	25.2	21.4	12.1
65 years and over				
Total ²	50.7	56.4	46.6	38.9
Less than 9 years	58.0	60.2	56.1	50.1
9-11 years	51.1	54.9	47.0	42.4
12 years or more	37.2	46.1	33.9	29.6

¹Includes unknown income.

²Includes unknown education.

Source: USDHEW: Edentulous Persons United States—1971, National Center for Health Statistics, Rockville, Md. June 1974, Table C.

References

1. Richards, N. David. Utilization of Dental Services, In Social Sciences and Dentistry: A critical bibliography. In Richards, N.D. and Cohen, L.K. (Eds.) Federation Dentaire International, 1971
2. Falk, I. S., Klem, M. C., and Sinai, N. The Incidence of Illness and Receipt of Costs of Medical Care Among Representative Families: Experiences in Twelve Consecutive Months During 1928-1931. Publication No. 26 of the Committee on The Costs of Medical Care, Chicago, 1933.
3. Perrott, G. St. J., Tibbitts, C., and Britten, R. H. 'The National Health Survey. Scope and Method of the Nation-wide Census of Sickness in Relation to its Social and Economic Setting.' Public Health Reports; 1939, 54, 1663-1687.
4. American Dental Association, Bureau of Economic Research and Statistics. The 1950 Survey of the Dental Profession, page 29, The 1953 Survey of Dental Practice, page 38, The 1956 Survey of Dental Practice, page 51, The 1959 Survey of Dental Practice, page 76, Chicago, various dates.
5. Gallup Survey No. 455, May 1950
6. Anderson, O. W. 'Family Dental Costs and Other Personal Health Services: A Nationwide Study.' Journal of the American Dental Association, 1957, 54, 69-73.
7. Anderson, O. W., and Feldman, J. J. Family Medical Costs and Voluntary Health Insurance: a Nationwide Survey, New York 1956.
8. Anderson, O. W., Collette, P., and Feldman, J. J. Changes in Family Medical Care and Voluntary Health Insurance, Cambridge, Mass., 1963.
9. Andersen, R., and Anderson, O. W. A Decade of Health Services, Chicago, 1967
10. U.S. National Health Survey: Health Statistics. Dental Care: Interval and Frequency of Visits. United States July 1957—June 1958. U.S. Public Health Service, Publication No. 584-B-14, Washington, D.C., 1960.
11. National Center for Health Statistics: Vital and Health Statistics. Dental Visits: Time Interval Since Last Visit. United States: July 1963—June 1964. U.S. Public Health Service, Publication No. 1000-Series 10, No. 29, Washington, D.C., 1966.
12. Freidson, E., and Feldman, J. J. 'The Public Looks at Dental Care.' Journal of the American Dental Association, 1958, 57, 325-335.
13. National Opinion Research Center. Public Attitudes and Practices in the Field of Dental Care. Chicago, 1960.
14. Kriesberg, L., and Treiman, B. R. 'Socio-Economic Status and the Utilization of Dentists' Services'. Journal of American College of Dentists, 1960, 27, 147-165.
15. O'Shea, R. M., and Gray, S. B. 'Dental Patients' Attitudes and Behavior Concerning Prevention'. Public Health Reports, 1968, 83, 405-410
16. Suchman, E. A., and Rothman, A. A. 'The utilization of Dental Services'. The New York State Dental Journal, 1965, 31, 151-158. & Milbank Memorial Fund Quarterly, 1969, 49 (Pt. II) 56-63.
17. Avnet, H. H., and Nikias, M. K. Insured Dental Care, New York 1967
18. Nikias, M. K. 'Social Class and Use of Dental Care Under Prepayment'. Medical Care, 1968, 6, 381-393.
19. Richards, N. David and Barmes, David E. Social Factors in Social Sciences and Dentistry: A critical bibliography. Dental Epidemiology. In Richards, N. D. and Cohen, L. K. (Eds.). Federation Dentaire International, 1971.
20. Potgeiter, M., Morse, E. H., Erlenback, F. M., and Dall, R. 'The Food Habits and Dental Status of Some Connecticut Children'. Journal of Dental Research, 1956, 35, 638-644.
21. Bixler, D. 'A comparison of Dental Caries Prevalence and Dental Care in

- Two Indiana Populations, One Urban and One Rural'. *Journal of the Indiana State Dental Association*, 1965, 44, 92-97.
22. McMillan, R. S. and A. Wolff. "Periodontal Disease" in W. J. Pelton, et al (Ed.). *The Epidemiology of Oral Health*. Harvard University Press, Cambridge, Mass. 1969, p. 2.
23. Mobley, E. L. and Pointer, M. 'Dental Caries and Periodontal Conditions Among Negro Children in Tennessee'. *Journal of the Tennessee State Dental Association*, 1969, 40, 21-28.
24. Mobley, E. L. and Smith, S. H. 'Some Social and Economic Factors Relating to Periodontal Disease Among Young Negroes Part I'. *Journal of the American Dental Association*, 1963, 66, 486-491.
25. Moore, R. M., Muhler, J. C., and McDonald, R. E. 'A Study of the Effect of Water Fluoride Content and Socio-economic Status on the Occurrence of Gingivitis in Schoolchildren'. *Journal of Dental Research*, 1964, 43 (Supplement), 782-783.
26. Russell, A. L. and Ayers, P. 'Periodontal Disease and Socio-economic Status in Birmingham, Alabama'. *American Journal of Public Health*, 1960, 60, 206-214.
27. National Center for Health Statistics: Selected Dental Findings in adults by age, race, and sex, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 7. Public Health Service, Washington. U.S. Government Printing Office, Nov. 1965.
28. U.S. Department of Health, Education and Welfare. *Need for Health Care Among Adults*. National Center for Health Statistics, Series 11, No. 36. Washington, D.C., March 1970.
29. U.S. Department of Health, Education & Welfare. *Edentulous Persons: United States—1971*. National Center for Health Statistics, Series 10, Number 89, Washington, D.C., June, 1974.
30. U.S. Department of Health, Education and Welfare. *Decayed, Missing and Filled Teeth in Adults*. National Center for Health Statistics, Series 11, Number 23, Washington, D.C. February, 1967.

List of Tables

Table 1 Number of Dental visits and number of dental visits per person per year, by color, sex and age: United States, 1969 **196**

Table 2 Number of Dental Visits per Person per Year by Poor and NonPoor Status, Color, and Age: U.S. 1964 and 1973 **197**

Table 3 Comparison of Studies Reporting Dental Services Utilization Data **197**

Table 4 Mean Number of Decayed, Missing, and Filled Teeth Among Dentulous Adults Aged 18-34 Years by Family Income and Sex 1960-62 **198**

Table 5 Average Periodontal Index of White and Black Adults by Sex and Age, U.S., 1960-62 **198**

Table 6 Mean Periodontal Index by Sex, Race, Family Income and Education: U.S. 1960-62 **199**

Table 7 Percent Edentulous Persons by Income Level and Age, U.S. 1971 **199**

Table 8 Percent of white and all other edentulous persons 45 years and over in the population, by sex and age: United States, July 1957-June 1958 and 1971 **200**

Table 9 Percent of edentulous persons aged 45 Years and over in the population, by family income, age, and educational level of the individual: United States, 1971 **200**

List of Figures

Figure 1 Percent of Dental Visits During Which an Extraction was Performed, by Education of Family Head, Color and Geographic Area (U.S.A., July 1963-June 1964). **189**

Figure 2 Dental Visits by Race, Education, Income and Residence **190**

Figure 3 Number of Dental Visits per Person per Year by Poor and Non-Poor Status and by Race: U.S. 1964 and 1973 **192**

Figure 4 Increased Dental Services Utilization by Age **193**

Figure 5 Mean Number of Decayed, Missing and Filler (DMF) Teeth Among Dentulous Adults, 18-34 Years of Age by Race and Sex, U.S. 1960-62 **193**

Figure 6 Percent of Dentulous Adults Who Should See a Dentist at an Early Date By Color, Income, Level, and Education, U.S. 1960-62 **195**

Figure 7 Percent of Persons Who Are Edentulous by Age, Sex, and Color, U.S. 1971 **195**

Chapter X

Preventive Health

Contents

A. Overview	207
B. Introduction	207
C. Overall Health Assessment	208
D. Preventive Care and Preventive Examinations	208
1. Pregnancy Care	208
2. Routine Physical Examinations	208
3. Other Preventive Examinations	209
E. Immunization	209
1. Measles	210
2. Rubella	210
3. Polio	210
4. Diphtheria-typhoid-pertussis	210
F. Nutrition	211
G. Life Style	211
References	224
List of Tables	225
List of Figures	225

Chapter X

Preventive Health

A. Overview

In this chapter the preventive health practices of the disadvantaged are compared with those of the rest of the population. For purposes of this analysis, two areas of preventive health are included. First, data pertaining to preventive medical care, including routine physical examinations, special purpose preventive medical examinations, and preventive pregnancy care, are discussed. Second, nonmedical personal habits that impact on health are included.

How one perceives the state of one's health bears some relation to any health actions taken on a curative or preventive basis. A far greater proportion of whites (50 percent) compared with racial minorities (36 percent) assessed their health as excellent. Combining both excellent and good assessments of health, 88 percent of whites compared to 36 percent of racial minorities made this assessment. A positive relationship exists between income and the likelihood of assessing one's health as excellent. Only 32 percent of the lowest income persons compared with 65 percent of the highest income persons rated their health as excellent.

Race, education, and income are determinants of pregnancy care. In 1973, 59 percent of whites compared with 45 percent of nonwhites visited a physician during the first trimester of pregnancy. A small proportion of low income persons and less educated persons visited a physician in the first trimester compared with high income and more educated persons. Whites and nonwhites had postnatal checkups with roughly the same frequency. However, higher proportions of high income and more educated women reported having had a postnatal

checkup than their income and education counterparts.

While income, education and race all appear to play a part in whether or not individuals obtain checkups or other preventive examinations, the differences among education and income groups are greater than the differences between racial groups. Almost twice the proportion of high income, compared with low income persons, and almost three times the proportion of more educated compared to less educated persons had general checkups during the year. Among children under 17 years of age who had a routine examination, racial differences are small, while income and residence differences are larger. A larger proportion of high income persons, persons who reside in metropolitan areas, and persons who reside in the Northeast part of the nation had a routine physical examination compared with the rest of the population. Income differentials are also greater than racial differentials for: 1) eye examinations, 2) pap smears, 3) breast examinations, 4) electrocardiograms and 5) glaucoma tests. The income differential is smaller than the racial differential for chest x-rays.

In the past 10 years the immunization level for polio has been declining between 10 and almost 30 percent depending on the age and racial group. Among whites 1 to 4 years of age, the rate declined from 77 percent in 1965 to 67 percent in 1974. Among nonwhites 15 to 19 years of age, the rate declined from 82 percent in 1965 to 49 percent in 1974. The immunization levels for polio, as well as for measles, rubella, and diphtheria-typhoid-pertussis, are lower among nonwhites than they are among whites. The

largest racial differential was observed for polio.

In the area of nutrition, racial differentials are greater than income differentials. Blacks have a higher prevalence rate of deficiencies of vitamins D, C, and A, iodine, calcium, and iron than do whites. Blacks, however, have lower prevalence rates for protein and niacin deficiencies. Blacks, also, have higher rates of multiple nutrition deficiencies than do whites.

The belief is growing among health professionals that behavior modification and health education may be more influential in improving health status than additional medical care. The smoking, diet, and drinking habits of the disadvantaged were compared to those of the rest of the population. Considering these three behavioral patterns which are believed to have the greatest impact on health, the disadvantaged do not, in general, appear to be worse than the advantaged. Only in the area of obesity, and only among black females, are the groups of interest at a disadvantage with regard to these life style measures.

B. Introduction

In Section 1502 of the National Health Planning and Resources Development Act of 1974 (P.L. 93-641) are listed ten national health planning goals. Priority eight deals with preventive health. Section 1502, priority 8 reads as follows:

"Sec. 1502. The Congress finds that the following deserve priority consideration in the formulation of national health planning and resources development programs: . . . /8/ The promotion activities for the prevention of disease, including studies of nutri-

tional environmental factors affecting health and the provision of preventive health care services. . . " (1)

In this chapter the preventive health experience of the disadvantaged is compared with that of the rest of the population. The utilization of preventive medical services and nonmedical behavior patterns that are believed to affect health status are included.

NCHS collects information regarding several of the most common preventive medical services, such as routine physical examinations, breast and eye examinations, and others. The availability of demographic characteristics facilitates a comparison of the disadvantaged with the remainder of the population. Immunization levels and nutritional status fall under the rubric of preventive health and are included in this chapter. In addition to preventive medical services, selected life style patterns that impact on health are, also, discussed in this chapter.

C. Overall Health Assessment

How one perceives the state of his health may or may not be a valid measure of health status, but it probably does bear some relation to any health action he is likely to take on a curative or preventive basis. In Table 1, health assessment responses of excellent, good, fair, and poor as reported in NCHS health interviews are presented along with selected demographic characteristics. A slightly larger proportion of whites (88 percent) judge their health as being *good or excellent* compared with racial minorities (81 percent) and to blacks (80 percent). The differences between whites and racial minorities who assessed their health as *excellent* are even greater: 50 percent of whites, compared with 36 percent of racial minorities and 35 percent of blacks assessed their health as excellent.

As income increases, the proportion of persons who assess their health as excellent increases. Only 32 percent of persons with incomes of \$3000 and under assess their health as excellent

compared with 65 percent of persons with incomes of \$25,000 and over. Considering income differences among whites separately from nonwhites, larger differences between income groups are observed among whites than nonwhites. Fifty-eight percent of whites, compared to 46 percent of racial minorities who earn \$10,000 and over assess their health as excellent. The proportions of whites and racial minorities assessing their health as excellent among lower income persons are similar: 33 percent of whites compared with 29 percent of racial minorities. Since the difference in proportions between high and low income persons who assess their health as excellent is greater among whites than among racial minorities, income appears to play a greater role in health assessment among whites than among nonwhites. Factors associated with residence appear to have little impact on how one assesses one's health.

D. Preventive Care and Preventive Examinations

1. *Pregnancy Care.* Prenatal and postnatal medical care data were collected in the National Health Interview Survey in 1973 "... because routine medical care during and after pregnancy is recognized by health professionals as an important preventive health care practice" (2, p. 1). The proportion of live births seen by a physician before delivery and the average number of prenatal visits do not vary by race or other demographic characteristics of the mother. The trimester of pregnancy of the first physician visit and postnatal care were related to race, income, and education, however.

A higher proportion of whites (59 percent) compared with nonwhites (45 percent) visited a physician for the first time during the first trimester. Conversely, a higher proportion of nonwhite first visits occurred after 4 months or more of pregnancy. Twenty-seven percent of nonwhite first visits and 15 percent of white first visits occurred after 4 months or more of pregnancy (See Table 2). Seventy-one percent of persons with 13 years of

more education visited a doctor during the first trimester of pregnancy compared with only 44 percent of those with less than 12 years education. Income is, also, related to whether or not a physician visit occurs during the first trimester. Seventy-one percent of women from high income families visited a physician during the first trimester compared with only 47 percent of women from low income families.

Income and education are determining factors in whether or not a postnatal checkup occurs, but the differences between subgroups on each of these variables is not great. Receipt of a postnatal checkup is similar for whites and nonwhites. Eighty-four percent of whites compared with 82 percent of persons other than white had received a postnatal checkup. Eighty-one percent of low income persons compared with 88 percent of high income persons received postnatal care. Seventy-nine percent of persons with less education compared with 87 percent of persons with more education received a postnatal checkup. The pattern of prenatal care and occurrence of postnatal care are influenced more by education than by any other factor, followed by income. Racial differences were not observed with regard to postnatal care.

2. *Routine Physical Examinations* Health Interview Survey respondents regularly are asked if they visited a physician for a general checkup during the past 12 months. In Table 3, responses to this question by selected characteristics are presented. Whether or not a person has had a general checkup during the year appears to be related to race, income, and education. A larger proportion of whites, (40 percent) compared with nonwhites (33 percent) see a physician for a general checkup during the year. A much larger proportion of persons earning \$15,000 or more (52 percent) have a yearly checkup than persons earning less than \$3000 (27 percent). Large differentials, also, occur among education groups. Fifty-nine percent of persons with 13 years or more

education compared with 23 percent of persons with less than 5 years education have yearly physical checkups.

One word regarding the reliability of these data is in order. Since interviewers do not provide a definition, how a person responds to this question depends on how he defines a checkup. There is no reason to believe, however, that one racial, income, or educational group defines a checkup more strictly than another. The direction of any possible bias, therefore, is difficult to predict.

Beginning in 1973, the Division of Health Interview Statistics, collected additional data regarding the use of selected kinds of medical procedures for the early detection of disease. These data are published in the document "Use of Selected Medical Procedures Associated with Preventive Care" (2). The specific types of medical procedures included are: electrocardiograms (EKG), glaucoma tests, chest x-rays, eye examinations, pap smears, breast examinations, and routine physical examinations. In Table 4, the proportion of the population who have had these preventive examinations within the past two years are presented by selected demographic characteristics.

"Routine physical examinations are limited to children under 17 years of age, as examinations of this type are easier to identify for this particular age group than for other persons" (2, p. 3). "This category includes checkups for specific purposes, such as: periodic (yearly) checkups, visits to the well-baby clinic, or examinations at school for athletics. Not included are visits to a physician for a checkup, examination for a specific condition, or visits for the sole purpose of receiving immunizations" (2, p. 2). In 1973, a routine physical examination was well defined for respondents. Among 17 year olds and under, racial differences in the proportion who have had a routine physical within two years are negligible (62.7 percent of whites, compared to 61.1 of all other races). Income, residence, and geographic

region differences are more substantial, however. Sixty-nine percent of persons 17 years of age and under, from families with high incomes, compared with 56 percent of persons from families with low incomes have had routine physicals within a two year period. Persons who reside in metropolitan areas, rather than non-metropolitan areas, are, also, more likely to have had a routine physical. Persons living in the Northeast are most likely to have had a routine physical (73 percent), while those living in the South are least likely (56 percent) (See Table 4).

3. Other Preventive Medical Examinations. While both income and racial groups differ in the proportion of people who report having had some selected preventive care examinations, differences among income groups are larger when the lowest of the four income groups is compared with the highest. The chest x-ray is an exception on two counts. First, 1973 data show that 55 percent of nonwhites, compared with 42 percent of whites, reported having had a chest x-ray within the past 2 years. The income differential is smaller: 42 percent of low income persons compared with 48 percent of high income persons report having had a chest x-ray. Secondly, while fewer lower income persons and persons of races other than white reported having had all the other examinations, the opposite occurs in the case of chest x-rays. The differentials reported may, or may not, mean that there is a racial differential which is distinct from an income differential.

In 1973 only 55 percent of low family income persons aged 17 years and under had routine physical examinations in the past two years compared with 69 percent of high family income persons. The racial differential for routine physical examinations was very small; 63 percent of whites compared with 61 percent of all others. A higher proportion of high income persons (63 percent) had an eye examination within two years than low income persons (50 percent). The racial differential for eye examinations was

small. Fifty-seven percent of whites compared with 54 percent of non-whites had this examination. Sixty-six percent of high income persons compared with only 43 percent of low income persons had a breast examination within the past two years. Sixty percent of whites compared with 57 percent of all others reported having a breast examination.

The income differential for persons who had an electrocardiogram was smaller than that of several of the other preventive examinations. Thirty-two percent of low income and 38 percent of high income persons had an electrocardiogram. Thirty-three percent of whites compared with 31 percent of all other races had an electrocardiogram in the past two years. A much higher percent of high income persons had a glaucoma test (42 percent) than low income persons (28 percent). A larger proportion of whites (34 percent) compared with all others (27 percent) had a glaucoma test in the past two years.

E. Immunization

"Perhaps, the most important specific protective measure of value in preventing infective disease is immunization" (3, p. 42). Diseases for which immunization is of primary importance include: smallpox, diphtheria, measles, pertussis, tetanus, poliomyelitis, and rubella. Given the high probability of successful disease prevention, concerted efforts in this area would appear very worthwhile. In fact, the most recent Forward Plan for Health does place special emphasis on immunization efforts. "PHS plans to increase the funding levels for state and local immunization projects ... to help reduce the national incidence rates of such diseases as measles, rubella, and influenza, and to stabilize the number of cases of polio, diphtheria, pertussis, and tetanus near their all time lows" (4, p. 82).

One reason for this emphasis on immunization efforts is that the proportion of children in the United States who are immunized is very small. A recent newspaper article refers to the immunization status of children in the

United States as a national disgrace. The article quotes Joseph Califano, Secretary, Health, Education, and Welfare, as estimating the proportion of children protected by immunization to be only between 60 and 70 percent, with much lower proportions in urban ghettos and poor rural areas of the nation (5). Immunization levels of disadvantaged compared with the rest of the population are discussed in this section as they relate to selected diseases.

1. *Measles*. "Before the measles vaccines were widely used, measles was a serious public health problem: 4 million cases of measles, 4,000 cases of measles encephalitis, and 400 deaths occurred each year" (6, p. 690). The proportion of persons with a history of measles vaccine and/or measles infection by race and age from 1969 to 1974 is presented in Table 5.

In all three age groups (1-4, 5-9, 10-13) and in each year from 1969 to 1974, whites had higher measles vaccine levels than all other races. In each age group, the immunization level is about 12 percentage points higher.

Among children ages 1 to 4, 69 percent of whites, compared with 56 percent of all others had a history of measles vaccine and/or measles infection in 1974. Among children 10-13 years of age 83 percent of whites compared with 69 percent of all other races had had a measles vaccine or infection. Relatively little change has occurred over time in the proportion of children immunized for measles.

2. *Rubella*. The percent of persons with a history of rubella vaccine by race and age from 1970 to 1974 are presented in Table 6. "Protection against rubella is important among small children, as an infected child can easily infect a mother who is pregnant with another child and cause congenital malformations in the unborn child." (7, p. 276).

Immunization levels for rubella are even lower than for measles. In 1974, 61 percent of whites ages 1 to 4 years, compared to 54 percent of all other races aged 1 to 4 years, had been immunized (See Table 6). The propor-

tion of vaccinated whites in this group, however, had increased from 38 percent in 1970 to 61 percent in 1974, while the proportion of nonwhites had increased from 32 percent in 1970 to 54 percent in 1974.

While the proportion of the population immunized for rubella has increased among both whites and all other races between 1970 and 1974, the racial differentials in each age group have remained fairly constant. In the 1 to 4 year and 5 to 9 year age groups, roughly 6 to 7 percent more whites than all other races were immunized for rubella in both 1970 and 1974. For both race groups and all age groups, with one exception, an increase of roughly 20 percent in the proportion immunized occurred between 1970 and 1974. The exception occurred among white 10 to 12 year olds whose immunization level increased about 30 percent, from 29 percent in 1970 to 58 percent in 1974. This large increase may be a function of catching up, since 10 to 12 year olds appear to have lower immunization levels than other age groups.

3. *Polio*. The decrease in the level of protection against polio in the last several years has attracted attention. "In spite of recent success in the control and prevention of measles, poliomyelites, and rubella immunization levels among children in this country remain unacceptably low. During the past 10 years, the percentage of children protected against polio has declined steadily. In 1973, two out of five children (aged 1 to 4) were not adequately protected" (4, p. 74)

In Table 7, the proportions of the population vaccinated for polio from 1965 to 1974 by race and age are presented. The lowest immunization levels from 1965 through 1972 were among 1 to 4 year olds. 5 to 9 year olds displayed a slightly higher level, and 10 to 14 year old levels were even higher, with a drop in level occurring among 15 to 19 year olds.

While the immunization levels of measles and rubella have increased, polio immunization levels declined between

1965 and 1974. The largest decline occurred in the 15 to 19 year age group, with a decline of almost 30 percent from 88.3 percent in 1965 to 60.2 percent in 1974. A substantial decline, also, occurred among 10 to 14 year olds, from 92.1 percent in 1965 to 69.8 in 1974. The immunization level of 5 to 9 year olds declined about 15 percent, from 90 percent in 1965 to 74 percent in 1974. The smallest decline occurred among 1 to 4 year olds, whose level was 74 percent in 1965 compared with 63 percent in 1974.

While immunization levels declined for both whites and all other races, the decline was greater for races other than white during this 10 year period. The immunization level of white 1 to 4 year olds declined about 10 percent, from 77 percent in 1965 to 67 percent in 1974; but the level of all other 1 to 4 year olds declined about 15 percent, from 60 percent in 1965 to 45 percent in 1974. Likewise, the decline for white 5 to 9 year olds was about 16 percent compared with a 20 percent decline among nonwhite 5 to 9 year olds during this period. The decline among white 10 to 14 year olds was 21 percent compared with a decline of 27 percent among all other races. The decline among white 15 to 19 year olds was 27 percent compared with a 33 percent decline among all other 15 to 19 year olds. In addition, racial differentials are very high. Between 62 and 76 percent of white children compared with only 45 and 60 percent of all other racial groups were protected against polio in 1974.

4. *Diphtheria-typhoid-pertussis*. "Protection against diphtheria, typhoid, and pertussis is universally recommended in the first year of life; yet only three-fourths of the children age 1-4 in the United States have such protection" (7, p. 280). The vaccination level for diphtheria-typhoid-pertussis (dtp) has varied slightly from year to year over the past 10 years, and was roughly the same in 1974, as it had been in 1965.

In 1974, 86 percent of the children in the age group 10 to 13 years old had been vaccinated for dtp. They had the

highest vaccination level, followed by 5 to 9 year olds with a similar level of 85 percent, compared with the lowest level of 74 percent among 1 to 4 year olds. The immunization level of non-whites was between 13 and 17 percent lower than that of whites.

F. Nutrition

"Adequate food and sound nutrition are essential to good health. Not only are they crucial for human survival and key factors in the prevention and recovery from illness, they are prerequisites for improving the quality of life.

Many Americans, at all socioeconomic levels, do not eat well. Nutritional problems range from undernutrition and dietary sub-nutrition, to obesity from overeating, to the quality and safety of the food supply" (4, p. 71).

Included in HEW's 1978-82 Forward Plan for Health, quoted above, is a policy statement expressing the Department's commitment to improving the nutritional status of all Americans (4).

Nutrition data for the United States are available from two national surveys of nutritional status: 1) The Health and Nutrition Examination Survey, (Hanes) 1971-1972 and 2) the Ten State Nutrition Survey conducted between the years 1968 and 1970. Data from the Health and Nutrition Examination Survey (HANES) are presented in Table 9. Ratios of the percent of persons with nutrient deficiencies facilitate comparisons of the following sub-groups: 1) blacks and whites; 2) persons below the poverty level and persons above the poverty level; and 3) poor blacks and poor whites. Racial comparisons reveal the following differences in nutritional status between blacks and whites. Blacks have higher prevalence rates of vitamin D, vitamin C, vitamin A, iodine, calcium, and iron deficiencies than do whites, and lower prevalence rates of protein and niacin deficiencies. The largest racial differential is for iron deficiency, with blacks having 3-1/2 times the prevalence rate of

whites. The racial differential is also high for iodine deficiency; blacks have a little over twice the rate of whites (See Table 9).

Income differentials are greater than racial differentials for only three of the eight nutrition deficiencies. (See income versus race differential discussion in Introduction, Chapter II). Those nutrition deficiencies that appear to be influenced more by income than by race are: 1) protein deficiency (but protein deficiencies are higher among persons *above* the poverty level than below the poverty level); 2) niacin deficiency, (the deficiency rate is again higher among persons *above* the poverty level); and 3) vitamin A deficiency, (with deficiency prevalence rate this time being higher among persons *below* the poverty level).

When poor blacks are compared with poor whites, poor blacks have the same or higher prevalence rates of deficiencies for all nutrients. Many of the differentials derived when poor blacks are compared with poor whites are greater than those in which all blacks are compared to all whites.

The nutrition survey results (HANES) have been summarized as follows:

"Blacks showed generally higher prevalence rates than whites did for clinical signs indicating possible nutrient deficiencies disregarding age and income level. These nutrients include vitamins A, C, and D, thiamine, calcium-phosphorus, and iodine (thyroid enlargement, group II).

Persons with incomes below the poverty level had generally higher prevalences for clinical signs when compared with persons above the poverty level over the different age groups for vitamins A and C and for the calcium-phosphorus imbalance." (8, p. 28)

The Ten State Nutrition Survey, 1968-70, was conducted specifically to obtain nutrition data about the disadvantaged in the United States. In Table 10, the percent of persons with multiple nutrition deficiencies are presented by State. Although the prevalence rates of multiple nutrition defi-

ciencies vary considerably from state to state, blacks had consistently higher rates than whites and, also, higher rates than other ethnic/racial groups in every state.

G. Life Style

"Many aspects of our current life style are not conducive to health. We smoke cigarettes, we drink alcohol, we get too little exercise, we eat too much, we live tense lives, we do not fasten seat belts, and we often do not take adequate care in other activities" (6, p. 690).

The preceding quotation clearly states the subject area of this section. In addition to purely medical preventive examinations and procedures, it is appropriate to include nonmedical life style patterns that impact on health. This inclusion is based on the current thinking among health professionals, that given today's disease patterns, behavioral modification and health education may be more influential in improving health status than additional medical care. While the need and importance of medical care and the health care system is acknowledged, several health professionals would agree with Victor Fuchs when he says . . .

"The greatest current potential for improving the health of the American people is to be found in what they do and don't do to and for themselves. Individual decisions about diet, exercise and smoking are of critical importance, and collective decisions affecting pollution and other aspects of the environment are also relevant" (10, pp. 54-55).

The following statement was made at a National Conference on Preventive Medicine, held in June 1975 by the American College of Preventive Medicine and the Fogerty International Center of the National Institutes of Health.

"An important means of preventing the health problems of our day, then, is to influence the daily habits of people. These health problems are now known to be caused largely by various aspect of a new style of life, including

cigarette smoking and excessive consumption of alcohol and food, that prevails among many people in the United States. The means of dealing with the current major health problems, thus, will evidently be much more dependent on personal, life-long behavior than has been true of health problems in the past. It will be necessary to involve individuals themselves in controlling these diseases, at least in the face of our present understanding of the origin of the major chronic diseases" (11, p. 113).

In this section, the smoking, diet, and drinking habits of the disadvantaged are compared with those of the rest of the population. The proportions of the population who are present cigarette smokers by age, sex, and income are presented in Table 11. The relationship of smoking habits to family income is not striking. Among males the lowest proportion of smokers are those from families with incomes under \$3,000 (39 percent) and for families with incomes of \$15,000 and over (38 percent). The highest proportion of smokers, among males are found in middle income families. Another pattern occurs among females. The proportion of female smokers increases as income level increases. The proportion of female smokers in low income families is 23 percent compared with 34 percent in high income families. Regarding residential differentials, persons living on farms are less likely to smoke than persons living in cities and in metropolitan areas.

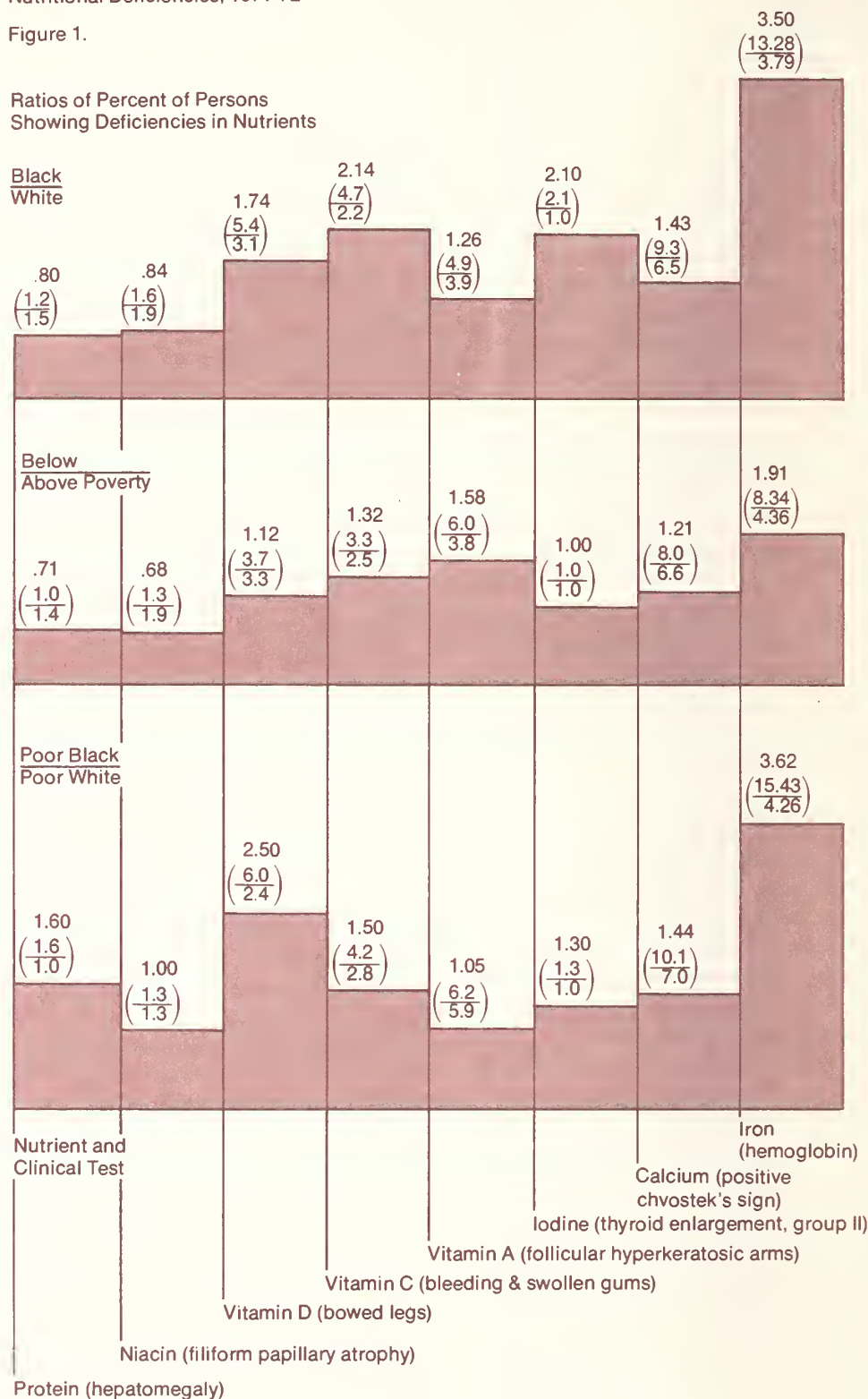
In Table 12, the proportion of obese adults are presented by sex, age, income, and race. Among males a larger proportion of persons with incomes above the poverty level are obese than persons with incomes below the poverty level. Among females a larger proportion of persons with incomes below the poverty level are obese than persons with incomes above the poverty level. A smaller proportion of males than females are obese. The largest proportion of obese adults are found among black females, age 20 to 44 (35 percent), while the lowest proportion of obese adults are found among black

Nutrition

Summary of Key Measures of
Nutritional Deficiencies, 1971-72

Figure 1.

Ratios of Percent of Persons
Showing Deficiencies in Nutrients



Sources: U.S.P.H.S., National Center for Health Statistics.

(1) Anthropometric and Clinical Findings, Preliminary Findings of the First Health and Nutrition Examination Survey, U. S., 1971-72.

(2) Preliminary Findings, of the First Health and Nutrition Examination Survey, U. S., 1971-72, Dietary Intake and Biochemical Findings.

males age 45 to 74 (5 percent). Obesity is less frequent among black males compared with white males and more frequent in black females compared with white females.

Regarding drinking habits and the disadvantaged, the results of surveys show that proportionately more people of lower socio-economic levels are abstainers than at upper levels, and that moderate and heavier drinking increases as social class rises (12, p. 17).

Regarding the three behavioral patterns (smoking, overeating, drinking) that have the greatest impact on prevalent disease conditions of today, the disadvantaged do not appear to be worse than the rest of the population. Only in the area of obesity are blacks strikingly different and then, only black females have a higher prevalence of obesity than whites.

Table 1

Assessment of Health Status Reported as *Fair & Poor* in Health Interviews by Selected Demographic Characteristics: United States, 1975 (percent)

	Age						Age				
	All	Under	15-44	45-64	65+		All	Under	15-44	45-64	65+
	Ages	15 Yrs.	Yrs.	Yrs.	Yrs.		Ages	15 Yrs.	Yrs.	Yrs.	Yrs.
	Percent						Percent				
All Ages	12.5	4.2	8.7	21.9	30.2	Racial Minority					
Sex						Under \$5,000	26.9	9.5	23.8	52.2	48.1
Male	11.3	4.4	7.1	21.0	30.9	\$5,000-9,999	17.7	7.1	16.6	39.0	38.3
Female	13.6	3.9	10.3	22.7	29.7	10,000+	9.9	4.1	9.8	18.4	24.4
Race						Residence ¹					
White	11.6	3.6	7.7	20.4	28.9	Within SMSA	11.5	4.0	5.5	20.0	27.9
Racial Minority	18.1	7.3	15.7	35.4	43.0	Large SMSA	11.1	3.9	8.2	18.8	25.9
Black only	19.0	7.7	16.4	36.9	44.1	Core County	12.1	4.4	9.1	19.9	26.6
Income						Fringe County	9.0	2.9	6.4	16.4	24.0
Under \$3,000	27.4	9.0	18.6	52.8	38.0	Medium SMSA	11.8	4.3	8.5	20.6	29.5
\$3,000-4,999	24.3	8.3	17.6	40.8	36.4	Other SMSA	12.5	4.1	8.2	24.1	33.2
5,000-6,999	18.3	5.0	13.5	35.5	30.1	Non-SMSA Counties	15.2	4.5	10.0	27.2	35.0
7,000-9,999	13.7	4.8	10.4	27.3	25.6	Adjacent to					
10,000-14,999	9.5	3.5	7.7	19.1	25.0	SMSA	15.2	4.7	10.4	27.2	34.9
15,000-24,999	6.3	2.3	5.1	12.0	21.0	Not adj. to					
25,000+	5.1	2.1	3.6	8.5	17.3	SMSA	15.2	4.3	9.4	27.2	35.0
Race + Income						Region					
White						Northeast	11.2	3.5	7.3	18.9	27.4
Under \$5,000	25.3	8.1	15.9	44.3	35.4	North Central	11.1	3.9	7.3	19.6	28.7
\$5,000-9,999	15.3	4.3	10.6	29.5	27.5	South	15.2	5.2	11.0	27.2	35.9
10,000+	7.2	2.6	5.5	13.5	22.1	West	11.2	3.5	8.7	20.3	25.5

¹ See Appendix for definitions of residence terms.

Source: U.S.P.H.S., National Center for Health Statistics. Unpublished data. Health Interview Survey

Table 2

Total number of live births, percent seen by doctor, and number with prenatal visits by number of months pregnant when doctor first seen, average number of prenatal visits, and percent with postnatal checkup, according to selected characteristics: United States, based on data collected in health interviews in 1973

Characteristic	Total number of live births in thousands	Percent seen by doctor before delivery	Number of live births with prenatal visits in thousands	Months pregnant when doctor first seen					Average number of pre-natal visits per live birth	Received postnatal checkup			
								Total ²		Yes	No		
											Pregnancy ended at less than 2 months	Pregnancy ended at 2 months or more	
				Total ¹	Less than 3 months	3 months	4 months or more						
				Percent distribution					Percent distribution				
All live births ³	2,754	98.9	2,725	100.0	57.1	25.5	16.8	11.3	100.0	83.6	10.3	4.5	
Age													
17-19 years	370	98.6	365	100.0	40.8	30.1	27.7	10.7	100.0	81.9	12.4	*(4.6)	
20-24 years	957	98.4	942	100.0	57.4	26.5	15.1	11.3	100.0	82.4	10.2	5.2	
25-29 years	859	99.4	854	100.0	63.5	23.4	13.0	11.4	100.0	86.0	9.8	*(3.1)	
30-34 years	379	99.2	376	100.0	65.2	22.9	11.4	11.7	100.0	83.1	11.1	*(4.0)	
35-44 years	189	98.9	187	100.0	42.8	25.1	31.6	10.6	100.0	83.1	*(7.9)	*(7.9)	
Color													
White	2,302	99.2	2,284	100.0	59.4	25.4	14.7	11.4	100.0	84.1	10.6	4.0	
All other	452	97.6	44.1	100.0	45.1	25.9	27.4	10.7	100.0	81.6	9.3	*(7.1)	
Family income													
Less than \$5,000	519	97.1	504	100.0	47.2	27.0	25.2	10.3	100.0	81.1	10.0	7.5	
\$5,000-\$9,999	952	99.7	949	100.0	53.8	27.8	17.6	11.3	100.0	85.5	9.5	4.0	
\$10,000-\$14,999	690	99.7	688	100.0	62.4	25.0	12.2	11.7	100.0	82.2	12.6	*(3.5)	
\$15,000 or more	432	98.8	427	100.0	71.2	19.7	8.7	11.9	100.0	88.0	8.6	*(2.3)	
Education of individual													
Less than 12 years	848	97.1	823	100.0	43.7	28.1	27.2	10.5	100.0	78.9	11.7	8.1	
12 years	1,288	99.8	1,285	100.0	59.2	27.0	13.2	11.5	100.0	85.3	10.2	3.1	
13 years or more	603	99.8	602	100.0	71.3	18.8	9.3	11.9	100.0	87.2	9.1	*(2.2)	
Geographic region													
Northeast	629	98.7	621	100.0	60.9	25.6	13.2	11.4	100.0	82.4	10.8	*(4.8)	
North Central	735	99.7	733	100.0	57.0	24.6	18.1	11.1	100.0	85.7	11.3	*(2.0)	
South	960	98.5	946	100.0	56.8	25.1	16.9	11.2	100.0	81.5	11.4	6.3	
West	430	98.6	424	100.0	52.4	27.6	19.3	11.4	100.0	86.7	*(6.3)	*(4.4)	
Place of residence													
SMSA	1,883	98.9	1,863	100.0	58.6	25.4	15.3	11.5	100.0	83.6	10.0	4.7	
Central city	902	99.0	893	100.0	56.0	24.9	18.5	11.2	100.0	82.7	10.0	6.0	
Not central city	981	98.9	970	100.0	60.9	26.0	12.4	11.7	100.0	84.5	10.1	*(3.5)	
Outside SMSA	871	99.0	862	100.0	53.8	25.4	20.0	10.8	100.0	83.7	11.0	4.1	
Health status													
Excellent	1,377	98.8	1,361	100.0	61.5	24.0	14.0	11.4	100.0	83.8	11.6	3.3	
Good	1,079	99.1	1,069	100.0	53.4	28.1	18.1	11.1	100.0	84.2	9.5	5.3	
Fair, poor	279	98.9	276	100.0	48.6	23.2	25.7	11.0	100.0	81.4	*(7.2)	*(7.5)	
Times pregnant													
1 time	969	99.4	963	100.0	58.7	25.1	15.3	10.9	100.0	86.1	8.6	*(3.5)	
2 times or more	1,718	98.7	1,696	100.0	56.2	25.9	17.4	11.4	100.0	82.7	11.1	4.9	

[Data are based on household interviews of the civilian, noninstitutionalized population. The survey design, general qualifications, and information on the reliability of the estimates are given in appendix I. Definitions of terms are given in appendix II.]

¹Includes unknown when doctor first seen.

²Includes unknown whether received a postnatal checkup.

³Includes births to women 17-44 years of age.

NOTES: The approximate relative standard errors of the estimates shown in this table are found on page 42 and the approximate relative standard errors of the percents shown in this table are found on page 44.

*() indicates estimate has a relative standard error of more than 30 percent. In general, the relative standard error will be less than 30 percent when the population estimate is greater than 35,000.

Table 3

Percent of Population with a General Checkup within a year, by selected characteristics: United States, 1971

Characteristic	Percent with general checkup
All persons ¹	39.2
Sex	
Male	38.2
Female	40.2
Race	
White	40.1
Racial Minority	32.7
Family Income	
Less than \$3,000	27.1
\$3,000-4,999	28.0
5,000-6,999	35.1
7,000-9,999	38.6
10,000-14,999	41.6
15,000 or more	51.5
Education of head of family	
Less than 5 years	23.2
5-8 years	22.7
9-11 years	26.4
12 years	42.2
13 years or more	59.2

¹ Includes unknown family income and education.

Source: U.S.P.H.S., National Center for Health Statistics, Series 10—No. 97

Table 4

Percent of population with preventive care examination within the past two years by selected demographic characteristics: United States, 1973

Demographic characteristics	Type of examination						
	Routine physical, under 17 years	Eye examination, 3 years and over	Chest x-ray, 17 years and over	Pap smear, females 17 years and over	Breast examination, females 17 years and over	Electrocardiogram, 40 years and over	Glaucoma test, 40 years and over
All persons ¹	62.4	56.6	43.8	57.6	59.5	33.0	33.3
Age							
3-16 years	57.7	71.3	...	...	...	...	...
17-24 years	...	55.9	39.1	58.1	59.9	...	...
25-44 years	...	46.2	44.7	74.7	73.7	...	...
45-64 years	...	54.5	47.2	52.0	54.8	32.7	34.8
65 years and over	...	48.4	41.5	30.1	36.9	37.3	34.0
Sex							
Male	64.6	56.3	44.5	...	...	36.3	31.1
Female	60.2	56.9	43.2	57.6	59.5	30.2	35.2
Color							
White	62.7	57.0	42.4	57.8	59.8	33.1	34.0
All other	61.1	53.8	54.8	56.0	57.4	31.4	27.2
Geographic Region							
Northeast	72.6	62.0	42.2	52.7	57.5	34.2	35.2
North Central	62.3	57.1	43.5	57.9	58.0	31.1	31.5
South	56.4	52.6	44.6	57.7	59.7	32.4	31.8
West	60.5	55.7	45.3	63.9	64.5	35.3	36.2
Residence							
Metropolitan	66.7	58.0	46.4	59.4	62.0	35.4	35.8
Nonmetropolitan	53.3	53.2	38.0	53.4	53.8	27.7	28.1
Family Income							
Under \$5,000	55.4	50.2	42.4	42.9	46.6	31.9	27.6
\$5,000-\$9,999	59.0	53.8	42.4	58.1	59.3	31.1	30.9
\$10,000-\$14,999	63.7	58.0	43.5	64.9	65.6	31.0	33.6
\$15,000 and over	69.0	63.0	47.6	66.2	68.7	37.9	42.0

¹Includes unknown income.

Source: National Center for Health Statistics. Unpublished data from the Health Interview Survey.

Table 5

Percent of persons with History of Measles Vaccine and/or measles infection by race and age, 1969–74, United States

Year	Race	Age in Year		
		1–4	5–9	10–13
1969	Total	66.9	80.1	79.9
	White	69.1	81.8	81.8
	Racial Minority	56.0	70.8	68.4
1970	Total	62.3	79.8	80.9
	White	64.9	82.1	82.6
	Racial Minority	50.0	67.8	70.3
1971	Total	66.6	81.3	81.6
	White	67.7	82.4	83.1
	Racial Minority	61.3	75.5	72.7
1972	Total	66.0	81.3	82.1
	White	67.1	82.9	83.5
	Racial Minority	60.5	73.0	74.0
1973	Total	64.1	79.6	81.6
	White	66.1	81.4	83.1
	Racial Minority	54.2	70.1	73.3
1974	Total	66.6	80.8	81.1
	White	68.6	82.4	83.2
	Racial Minority	56.3	72.4	69.4

Source. U.S.P.H.S. Center for Disease Control: Data from the U.S. Immunization Survey

Table 6

Percent of persons with history of rubella vaccine by race and age, 1970-74, and by geographic division and age, 1974: United States

Year	Race	Age in years		
		1-4	5-9	10-12
1970	Total	37.2	46.5	29.5
	White	38.3	47.4	29.0
	All other	31.8	41.7	32.0
1971	Total	51.2	63.2	47.3
	White	51.8	63.5	46.7
	All other	48.2	61.6	51.2
1972	Total	56.9	66.8	55.2
	White	57.8	67.4	54.8
	All other	52.6	63.7	57.7
1973	Total	55.6	64.9	54.1
	White	57.0	65.8	54.0
	All other	48.5	59.8	54.2
1974	Total	59.8	68.0	57.5
	White	61.0	69.0	57.9
	All other	53.6	62.9	55.2

Year	Geographic Division	Age in years		
		1-4	5-9	10-12
1974	New England	57.1	66.8	53.7
	Middle Atlantic	66.5	73.5	63.2
	East North Central	59.9	67.7	57.5
	West North Central	58.2	73.9	63.5
	South Atlantic	59.7	70.2	57.2
	East South Central	55.9	61.4	50.8
	West South Central	58.3	67.9	60.0
	Mountain	52.8	61.6	56.6
	Pacific	59.0	61.6	50.3

Source: Center for Disease Control; Data from the U.S. Immunization Surveys.

Table 7

Percent of persons with 3 or more doses of polio vaccine by race and age, 1965-1974, and by geographic division and age, 1974: United States

Year	Race	Age in years			
		1-4	5-9	10-14	15-19
1965	Total	73.9	89.9	92.1	88.3
	White	76.6	91.4	93.1	89.2
	All other	59.6	81.3	85.9	82.1
1966	Total	70.2	88.2	90.0	86.4
	White	72.9	89.6	90.9	87.4
	All other	56.6	79.8	85.0	79.1
1967	Total	70.9	88.3	89.7	82.5
	White	73.1	89.8	90.7	83.5
	All other	60.2	80.5	83.5	75.5
1968	Total	68.3	84.9	87.8	81.3
	White	71.0	86.3	89.2	82.5
	All other	54.5	77.0	79.3	73.2
1969	Total	67.7	83.6	85.7	79.8
	White	70.7	85.4	87.7	81.4
	All other	53.6	73.6	74.8	69.6
1970	Total	65.9	82.3	85.3	77.8
	White	69.2	83.8	86.6	79.5
	All other	50.1	74.8	76.7	67.7
1971	Total	67.3	81.2	83.9	77.0
	White	70.5	82.8	85.9	79.0
	All other	51.9	72.9	71.9	65.0
1972	Total	62.9	78.9	81.8	75.4
	White	66.3	81.6	83.7	77.3
	All other	45.2	64.7	71.5	63.7
1973	Total	60.4	71.4	69.3	59.1
	White	64.4	73.5	71.1	61.0
	All other	39.8	60.3	59.0	47.8
1974	Total	63.1	73.5	69.8	60.2
	White	66.7	76.0	71.8	62.1
	All other	45.0	60.4	59.1	49.3
Year	Geographic division	Age in years			
		1-4	5-9	10-14	15-19
1974	New England	71.4	79.6	73.4	59.6
	Middle Atlantic	64.1	71.8	67.7	56.0
	East North Central	59.0	66.2	61.6	53.2
	West North Central	61.4	71.9	66.0	57.3
	South Atlantic	63.1	74.5	70.7	59.9
	East South Central	57.9	73.4	70.9	66.1
	West South Central	67.3	81.1	79.7	71.6
	Mountain	62.9	75.1	71.9	68.5
	Pacific	63.9	77.2	76.3	64.1

Source: Center for Disease Control: Data from the U.S. Immunization Surveys.

Table 8

Percent of persons with 3 or more doses of diphtheria-typhoid-pertussis vaccine by race and age, 1965-1974, and by geographic division and age, 1974: United States

Year	Race	Age in years		
		1-4	5-9	10-13
1965	Total	73.9	83.9	—
	White	77.8	86.0	—
	All other	53.3	71.2	—
1966	Total	74.5	83.4	—
	White	78.6	85.7	—
	All other	52.9	69.8	—
1967	Total	77.9	87.7	89.3
	White	81.2	89.7	91.0
	All other	61.5	75.9	79.2
1968	Total	76.5	85.4	87.8
	White	80.0	87.5	90.1
	All other	58.8	73.3	73.8
1969	Total	77.4	86.1	88.0
	White	80.4	87.6	80.4
	All other	62.8	78.0	80.2
1970	Total	76.1	85.9	87.0
	White	79.7	87.6	88.8
	All other	58.8	77.5	76.4
1971	Total	78.7	86.4	87.4
	White	81.6	88.1	89.2
	All other	65.1	77.7	77.1
1972	Total	75.6	85.4	87.2
	White	78.8	87.3	88.7
	All other	58.7	75.0	78.5
1973	Total	72.6	81.9	83.8
	White	75.8	83.4	85.5
	All other	56.7	74.3	74.0
1974	Total	73.9	84.7	85.5
	White	76.8	86.7	87.5
	All other	59.6	74.2	74.8
Year	Geographic division	Age in years		
		1-4	5-9	10-13
1974	New England	77.9	88.3	87.6
	Middle Atlantic	72.8	83.6	84.0
	East North Central	75.4	82.7	85.8
	West North Central	73.3	81.4	85.7
	South Atlantic	73.4	84.4	82.9
	East South Central	72.4	87.4	88.0
	West South Central	75.3	89.4	90.2
	Mountain	71.4	82.1	84.3
	Pacific	72.4	85.4	84.6

Source: Center for Disease Control: Data from the U.S. Immunization Surveys.

Table 9

Percent of Persons With Two or More Deficient and/or Low Biochemical Values in Hemoglobin, Vitamin A, Vitamin C, and Riboflavin by Race and Ethnic Group in Eight States and New York City Nutrition Surveys, 1969-1970

State	Ethnic/Racial Groups					
	Total	White	Black	Spanish American	American Indian	Oriental
Total	4.2	2.3	10.3	1.1	5.1	2.0
New York State	1.6	1.3	3.4	0.0	0.0	0.0
Kentucky	6.1	4.1	11.9	—	—	—
Michigan	3.2	0.5	8.0	0.0	0.0	0.0
New York City	3.0	0.6	4.9	1.8	—	0.0
West Virginia	4.0	3.5	9.8	0.0	—	—
California	1.3	0.9	3.5	0.6	2.6	0.9
Washington	3.6	3.2	8.2	1.2	6.0	7.3
South Carolina	14.7	9.1	15.1	—	0.0	—
Massachusetts	2.2	1.6	5.7	3.6	—	0.0

Source: USDHEW, *Ten State Nutrition Survey in the U.S. 1968-1970*, Preliminary Report to Congress, April 1971, Table 12F.

Table 10

Percent of the population who are present cigarette smokers by sex according to age, residence, and income: United States, 1970

Age, residence, and family income	Sex Male	Female
Age		
17-24 years	40.6	30.2
25-34 years	51.6	38.1
35-44 years	49.6	39.2
45-54 years	47.4	36.5
55-64 years	40.9	28.3
65 years and over	23.0	10.9
Residence		
Metropolitan	43.4	33.1
Nonmetropolitan		
City	44.3	28.2
Farm	32.9	14.2
Family income		
Under \$3,000	39.2	22.8
\$3,000-\$4,999	43.9	28.9
\$5,000-\$6,999	47.2	32.5
\$7,000-\$9,999	46.9	32.5
\$10,000-\$14,999	43.3	33.3
\$15,000 and over	37.8	34.1

Source: National Center for Health Statistics; Cigarette Smoking: United States, 1970. *Monthly Vital Statistics Report*, Vol. 21, No. 3 Supplement; and unpublished data from the Health Interview Survey.

Table 11

Percent of Obese Adults Ages 20-44 Years and 45-74 Years, by Race, Sex, and Income Level: United States, 1971-72 (Hanes Preliminary)

Age	Percent Obese	
	Male	
	White	Black
Income below poverty level ¹		
20-44	9.3	10.9
45-74	15.4	5.1
Income above poverty level ¹		
20-44	17.0	11.3
45-74	13.3	9.7
Age	Female	
	White	
	White	Black
Income below poverty level ¹		
20-44	25.1	35.0
45-74	27.6	32.7
Income above poverty level ¹		
20-44	18.6	25.0
45-74	24.7	32.4

¹Excludes persons with unknown income.

Source: National Center for Health Statistics: Preliminary Findings of the First Health and Nutrition Examination Survey, United States, 1971-1972: Anthropometric and Clinical Findings DHEW Pub. No. (HRA) 74-1229

References

1. The National Health Planning and Resources Development Act of 1974, Public Law 93-641, 93rd Congress, S. 2994, January 4, 1975.
2. National Center for Health Statistics: Use of Selected Medical Procedures Associated with Preventive Care, United States, 1974. DHEW Publication No. (HRA) 77-1538, Series 10, No. 110, U.S. Government Printing Office, Washington, D.C., March 1977.
3. Grant, Murray. Handbook of Community Health. Second Edition, Lea Febiger, Philadelphia, 1975.
4. U.S. Public Health Service: Forward Plan for Health. (FY 1978-82) DHEW Pub. 017-000-00172-8, U.S. Government Printing Office, Washington, D.C. 1976.
5. Pittsburgh Post Gazette, April 1, 1977.
6. Preventive Medicine, U.S.A. Task Force Reports Sponsored by The John E. Fogarty International Center for Advanced Study in the Health Sciences, National Institutes of Health and The American College of Preventive Medicine, Prodist Press, New York, 1976.
7. U.S. Public Health Service, Health Resources Administration, Health: United States, 1975. DHEW Pub. No. 76-1232, U.S. Government Printing Office, 1976.
8. National Center for Health Statistics: Anthropometric and Clinical Findings, Preliminary Findings of the First Health and Nutrition Examination Survey, U.S. 1971-72. U.S. Government Printing Office, Washington, D.C., April 1975.
9. U.S. Public Health Service: Health Resources Administration, Trends Affecting U.S. Health Care Systems, Health Information Planning Series, Vol. 1. U.S. Government Printing Office, Washington, D.C., January 1976.
10. Fuchs, Victor R. Who Shall Live? Health, Economics, and Social Choice, Basic Books, Inc., New York, 1974.
11. Breslow, Lester. Section 1502(8) Prevention in Personal Health Services: A Task Force Study. *In* Papers on the National Health Guidelines, The Priorities of Section 1502, U.S. Public Health Resources Administration. U.S. Government Printing Office, Washington D.C., January 1977.
12. National Institute on Alcohol Abuse and Alcoholism: Alcohol and health, new knowledge. Preprint Edition. Alcohol, Drug Abuse, and Mental Health Administration. U.S. Government Printing Office, Washington, D.C., June 1974. pp. 98-101.

List of Tables

Table 1 Assessment of Health Status as Reported in Health Interviews by Selected Demographic Characteristics: United States, 1975 **213**

Table 2 Total number of live births, percent seen by doctor, and number with prenatal visits by number of months pregnant when doctor first seen, average number of prenatal visits, and percent with postnatal checkup, according to selected characteristics: United States, based on data collected in health interviews in 1973 **214**

Table 3 Percent of Population with a General Checkup within a year, by selected characteristics; United States 1971 **215**

Table 4 Percent of population with preventive care examination within the past two years by selected demographic characteristics: United States, 1973 **216**

Table 5 Percent of persons with history of measles vaccine and/or measles infection by race and age, 1969-74, and by geographic division and age, 1974: United States **217**

Table 6 Percent of persons with history of rubella vaccine by race and age, 1970-74, and by geographic division and age, 1974: United States **218**

Table 7 Percent of persons with 3 or more doses of polio vaccine by race and age, 1965-74, and by geographic division and age, 1974: United States **219**

Table 8 Percent of persons with 3 or more doses of diphtheria-typhoid-pertussis vaccine by race and age, 1965-1974, and by geographic division and age, 1974: United States **220**

Table 9 Percent of Persons with Two or More Deficient and/or Low Biochemical Values Hemoglobin, Vitamin C, and Riboflavin by Race and Ethnic Group in Eight States and New York City Nutrition Surveys, 1969-1970 **221**

Table 10 Percent of the population who are present cigarette smokers by sex according to age, residence and income: United States, 1970 **222**

Table 11 Percent of obese adults ages 20-44 years and 45-74 years, by race, sex, and income level: United States, 1971-72 (HANES Preliminary) **223**

List of Figures

Figure 1 Summary of Key Measures of Nutritional Deficiencies.

Chapter XI

Utilization of Health Services

Contents

A. Overview	229
B. Introduction	229
C. Ambulatory Care	230
1. Physicians' Offices	230
2. Neighborhood Health Centers	231
3. Outpatient Departments of Hospitals	231
D. Inpatient Care: Short-term	231
1. Short-stay Hospitalization - Community Hospitals	232
2. Veterans Administration Hospitals	232
3. Short-stay Hospitalization Involving Surgical Procedures	232
E. Inpatient Care: Long Term	233
1. Long-term Hospitals	233
2. Nursing Homes	233
3. Other Long Term Medical Care Institutions	233
F. Home Care, Telephone Contacts	233
G. Regular Source of Care	234
H. Interpretation of Utilization Trends	234
1. Health Needs and Health Status	234
2. Access	236
3. Attitudes	236
References	252
List of Tables	254

Chapter XI

Utilization of Health Services

A. Overview

In this chapter the health care utilization patterns of the disadvantaged are compared with those of the rest of the population. Both national and local data are used in this analysis. Medical care utilization is categorized in terms of the following modes of medical care: (1) ambulatory care; (2) inpatient care on a short-term basis; (3) inpatient care on a long-term basis; (4) home care; and (5) telephone contacts.

To summarize the utilization pattern of nonwhites and low income persons compared with whites and higher income persons:

- 1) a smaller proportion of nonwhites and low income persons see a physician during the year;
- 2) the average number of physician visits a year is lower among nonwhites, *but* higher among low income persons;
- 3) outpatient department utilization is greater among nonwhites and low income persons;
- 4) short stay non-federal hospitalization rates are lower among nonwhites, *but* higher among low income persons;
- 5) length of stay is longer for both nonwhites and low income persons;
- 6) the surgical procedure rate of nonwhites is lower, but the surgical procedure rate of low income persons is higher;
- 7) fewer nonwhites and low income persons report to a physician as a regular source of care (more report to clinics as regular source);
- 8) a larger proportion of nonwhites and low income persons report no regular source of care;

9) nonwhites are underrepresented in nursing homes and institutions for the mentally retarded, and overrepresented in institutions for the mentally ill; and

10) both telephone contacts and physician house calls are made with greater frequency to white households and to high income households than to nonwhite and to low income households.

Utilization of health care services is related to and influenced by at least three factors. First, a relationship exists between utilization and health needs and health status. In general, the greater the health needs of a population the greater the utilization of the medical care system. In a study which compared health needs with utilization, investigators found that moderately larger proportions of racial minorities and low income persons seen by physicians have serious medical problems, as compared to whites and to higher income persons. Another health needs indicator, the use disability ratio, is a measure of the use of health services relative to the need for those health services. This ratio was found to be lower among low income persons and among nonwhites than among high income persons and among whites, suggesting lower utilization relative to need by low income persons and nonwhites. These studies indicate that lower utilization of health services by the disadvantaged is not explained by fewer health needs.

A second factor which is related to health service utilization is access. That is, any person or group of persons who are characterized as having those qualities that prevent or make entry into the medical care system more

difficult will use the system less frequently. Two common barriers to health care, waiting time and traveling time were both found to be longer for nonwhites and for low income persons than for the rest of the population.

A third factor which is related to health service utilization is the attitude of an individual toward his health and toward the health care system. Social researchers have observed attitudes among the poor which appear to result in: (1) failure to regard symptoms as health problems, and (2) delay in or failure to obtain available health services.

B. Introduction

Where and how often the disadvantaged seek medical care in comparison with the rest of the population is the basic analytical question treated in this chapter. Factors thought to be associated with any observed differences in utilization are discussed. Data from several consumer and provider surveys at the national level and at the local level are presented. The bulk of the data presented, however, are taken from the studies conducted by Ronald Andersen at the University of Chicago.

Data from three household surveys conducted by the Center for Health Administration Studies (CHAS) at the University of Chicago in 1958, 1963, and 1970 are presented in this chapter. These studies are regarded as sound methodologically, and they provide an opportunity for observing trends. Data from CHAS and from the National Center for Health Statistics (NCHS) are discussed and grouped into the following sub-topics: care received on an ambulatory basis, long-term and short-term inpatient care, telephone contacts, and home care.

C. Ambulatory Care

The generally accepted definition of

ambulatory medical care is that medical care which does not involve an overnight stay in an inpatient facility. Thus, the rubric ambulatory medical care includes medical care received in physicians' offices, outpatient departments and emergency rooms of hospitals, clinics, and health centers.

1. *Physicians' Offices.* An important measure of medical service utilization is the proportion of the population who see a physician during the year. Roughly two-thirds of the American population saw a physician at least once during 1970. (1) While as many as 68 percent of the total population saw a physician during that year, only 58 percent of nonwhites, 62 percent of persons with 8 years or less education, and 65 percent of low income persons had seen a physician. The racial differential (.83) and the education differential (.82) were greater than the income differential (.92) (See Table 1). The education differential reported here was calculated by dividing the proportion of people in the lowest education group who saw a physician by the highest education group who saw a physician. The income ratio also compared the lowest and the highest income groups. Middle education groups and medium income groups were excluded because the format of the data did not permit combining these groups.

Between 1958 and 1968, while the proportion of the total population seeing a physician remained fairly stable, increases were observed among both nonwhites and low income persons. The proportion of nonwhites seeing a physician increased from 49 percent in 1963 to 58 percent in 1970, but remained lower than the proportion of whites (70 percent) seeing a physician in 1970 (Table 1). From 1963 to 1970, an increase occurred in the percentage of low (from 56 to 65 percent) and middle (from 64 to 67 percent) income persons who reported seeing a physician, while no change occurred among high income persons.

While the proportion of the total U.S. population who sees a physician in a year increased between 1958 and 1970

(from 66 to 68 percent), there was a decrease in the mean number of physician visits per person (from 4.4 to 4.0) during this same period (See Table 2). The mean number of visits differed among income and race groups. Low income persons reported considerably more physician visits (4.9) than high income persons (3.6) in 1970. As was previously mentioned, a lower proportion of low income persons (58 percent) saw a physician compared with other income groups (70 percent). The poor, then, are less likely to see a physician, but once they do the volume of their revisits is higher than that of the rest of the population (4.4 compared with 4.0).

The pattern of physician usage is different among racial groups compared with income groups. A lower proportion of low income persons compared with higher income persons see a physician, and once contact is made, low income persons have a larger volume of revisits than high income persons. The pattern differs for racial groups. A lower proportion of nonwhites than whites sees a physician. Once a contact is made, however, nonwhites also have a *lower* volume of physician revisits than whites. Between 1963 and 1970, the gap in the mean number of visits between the races narrowed. This reduction resulted from the two-fold change of an increase among nonwhite visits coupled with a decrease among visits by whites. The race differential in 1970 was .88 compared with .68 in 1963. The income differential, also, decreased considerably in size and direction. In 1963 low income persons reported fewer (4.4) visits than high income persons (4.6)—making the low to high income differential only .96. In 1970, however, low income persons reported more (4.9) visits than high income persons (3.6)—making the low to high income differential 1.36.

During both of the comparison years (1963 and 1970), the most educated group had the largest number of visits, although the number for the less educated did increase. People living in urban areas see a physician more fre-

quently than those living in rural areas. While the average number of physician visits of low income persons, nonwhites, and less educated persons increased from 1963 to 1970, the farm population experienced a decrease during this period.

Are those trends in utilization that were observed between 1958 and 1970 continuing into the 1970's? NCHS data may be used to a limited extent to extend the comparison period. Differences in methodology, as well as differences in some operational definitions, exist between the Center for Health Administration Studies (CHAS) and NCHS's Health Interview Survey (HIS) data. One such difference is that HIS estimates are based on the proportion of persons with physician visits and the mean number of physician visits including telephone calls, while telephone calls are excluded from the CHAS estimates. As a result, the estimated mean number of visits is about 0.6 visits higher for NCHS data than it is for CHAS data.

The proportion of the population seeing a physician continued to increase from 1970 to 1974, starting from 68 percent in 1970 and reaching 75 percent in 1974 (See Table 3). If the rate of increase in persons seeing a physician from 1970 to 1974 continues, the proportions of low income persons who see a physician will exceed that of a high income person by 1977 (a projected 80.1 for low income and 78.9 percent for high income persons). The racial differential, however, will take longer to disappear if the rate of increase of whites and nonwhites from 1970 to 1974 continues. The proportion of whites and nonwhites who see a physician in a year will be equal (at 81 percent) by 1980.

If the rate of increase of mean number of physician visits continues as it did in the years from 1970 to 1974, the mean numbers of visits will be equal (5.26) for both whites and nonwhites by 1979. Mean number of physician visits for low income persons was higher compared with high income persons in

both 1970 and 1974, and this differential is increasing.

In contrast to HIS and CHAS data which are obtained from the health consumer, the National Ambulatory Medical Care Survey (NAMCS) collects similar data from the provider. In this survey of office-based physicians, the number of visits disaggregated by several demographic characteristics are available for 1973-1974 and are presented in Table 4.

In 1973-1974, according to NAMCS data, nonwhites had about 19 percent fewer physician visits per person than whites (2.6 compared with 3.2). According to HIS data, in 1974 nonwhites had about 12 percent fewer physician visits per person (4.4) than whites (5.0) (Table 3). The average number of visits, as well as the differentials between the races, do not agree in these two surveys. Since the NAMCS survey has been conducted one time only, not only is trend data not available from it, but few if any methodological studies of NAMCS data compared with other data are available at this time. Because of its single administration, no conclusion can be drawn as to which survey produced the more accurate data. We can postulate some reasons for the discrepancies, however, and these should be checked out before the results of either study are used to determine the magnitude of the access problem:

1. The HIS includes hospital visits while the NAMCS involves office based visits only.
2. Greater accuracy of physician office records.
3. Better recall of consumers.
4. A sample design which resulted in better representation of the population in NAMCS compared with HIS.
5. Better sample of HIS compared with NAMCS.
6. Basic incomparability of data.

2. *Neighborhood Health Centers.* Neighborhood Health Centers, originally sponsored by the Office of Economic Opportunity, were

established for the express purpose of providing health care to the poor. These centers are located in communities and in rural areas throughout the United States. The emphasis of the Centers is on delivery of comprehensive medical care, "Including health maintenance, the treatment of physical and emotional problems, and the personalized service with emotional and educational support necessary for persons within the catchment area" (2, p. 225). Since all utilizers of these centers are disadvantaged, no comparisons of differential utilization are made. It is simply pointed out here that in 1974, 80 percent of the registrants who used neighborhood health centers were members of ethnic and racial minorities (3).

3. *Outpatient Departments of Hospital.* In Table 5, the number and rate of outpatient department and emergency room visits by selected demographic characteristics are presented for the U.S. for 1973. The visit rate to outpatient departments of races other than white was 160 percent more than that of whites, 736 visits per 1000 nonwhite population, compared with 283 per 1000 population. Income comparisons revealed that 137 percent more visits per population to outpatient departments are made by the lowest family income group compared with the highest income group. Neither the racial nor the income differential is as great for emergency room utilization, but differences in the same direction do exist.

While outpatient department utilization at the national level may be estimated from visits to these departments, as reported by consumers in the Health Interview Survey (HIS), no national *provider* outpatient department utilization data similar to provider physician utilization data (NAMCS) are available. Both consumer surveys (HIS and CHAS) found that nonwhites reported a clinic as their regular source of care with twice the frequency of Whites. (See Section G of this chapter for further discussion). One local provider study of hospital outpatient departments in the New

York area (4, 5) reported similar findings: 32 percent of all visits were made by White patients; 37 percent by Black patients; 29 percent by Hispanic; and 2 percent by other ethnic groups. Since the proportion of Blacks in the population served by these outpatient departments was 16.3 percent, and that of Whites was 82 percent; a substantially higher proportion of the non-white population use outpatient departments compared with Whites.

When utilization rates among Comprehensive Health Planning Districts in the New York area were compared, it was found that the proportion of the minority population in a district was the most important factor explaining variation in outpatient department utilization rates. The second most important factor explaining such variation was the per capita income, which was found to be inversely related to outpatient department utilization (5, p. 6). The average number of visits per person to hospital based ambulatory services by nonwhites was more than twice that of whites, while the annual visits per capita of persons from low income families was only 87 percent higher than that of higher income families (1971 HIS data). Both the national study (consumer data) and the local study (provider data) indicate that clinic utilization is more closely associated with ethnicity than with income (5, p. 18). A substantial degree of inter-correlation, of course, exists between ethnicity and income.

D. Inpatient Care: Short-term

The utilization patterns of persons hospitalized in short-term hospitals is analyzed in this section. First, short-term general non-federal hospitals or community hospitals are discussed followed by mention of short-term federal hospitals. "In essence, a short-stay hospital is one in which inpatient services are rendered, with the expectation that the problem occasioning admission will be resolved by that admission within a relatively brief period; it is distinguished from those facilities in which an extended stay for continuous care or prolonged rehabilitation is expected" (6, p. 43).

The NCHS Hospital Discharge Survey defines short-term hospitals as those hospitals which have at least six beds for inpatient use and an average length of stay of less than 30 days (6, p. 43). More than one out of every 20 persons in the United States is hospitalized in a short-term hospital each year, and this type of care accounted for the largest expenditure category in total national health spending in 1975 (6, p. 43).

1. *Short-stay Hospitalization - Community Hospitals.* Hospital utilization rates among income groups have changed since 1953. In 1953, the number of hospital admissions per 100 person-years was the same for all income groups, but progressively larger admission rates were observed among lower income groups. By 1970, the lowest income groups had a hospital admission rate of about twice that of the highest income group. Nineteen hospital admissions per 100 person-years were reported by persons in families with incomes of under \$2000 yearly compared with 9 hospital admissions per 100 person-years by persons in \$15,000 yearly income families (See Table 6). "Medicare and Medicaid may well account for some of these basic changes. However, again it should be pointed out that the changes we are observing were beginning to take place before the passage of these programs" (1, p. 34).

Although income and race are highly correlated, the hospital utilization patterns of low income persons do not follow those of nonwhites. Low income persons had relatively high admission rates as compared with high income persons, while nonwhites had relatively low admission rates compared with whites. Age distributions within these groups may be partially responsible for the differences noted, but they could not account for the total difference. For instance, older people tend to have higher admission rates, tend to cluster in low income groups, and tend to make up a smaller portion of the nonwhite population than the white population.

The length of hospitalization of the disadvantaged is consistently and con-

siderably longer on average than that of the rest of the population. The largest differential occurs among income groups and the smallest between racial groups. The average length of stay of nonwhites (9.8 days) is about 20 percent greater than that of whites (8.2 days). The average length of stay of persons with 8 years or less of education (10 days) is about 40 percent greater than that of persons with 13 years or more education (7.2 days). The average length of stay of persons from under \$2000 income families (9.7 days) is about 43 percent higher than that of persons from \$15,000 and over income families (6.8 days) (See Table 6).

A word of caution is necessary regarding any bias from missing data. A serious drawback of NCHS hospitalization data (provider survey) is that race is not stated on a large number of discharges. In fact, the number of patients for which color is not stated is greater than the number of nonwhite discharges. In CHAS data on the other hand, race appears to be known for all cases. A comparison of 1970 NCHS and CHAS hospitalization data by race yielded the following: 13.5 discharges per 100 white population compared with 11.4 discharges per 100 nonwhite population were made in 1970, according to CHAS data. The racial differential using CHAS data works out to 1.18. NCHS data, however, yield a higher differential, 1.36, or 15 discharges per 100 white population compared with 11 discharges per 100 nonwhite population. Comparisons of NCHS and CHAS race differentials in utilization may be useful in interpreting any comparisons of hospitalization data by race.

2. *Short-stay Hospitalization—Veterans Administration Hospitals.* The experience of nonwhites in general medical and surgical Veterans Administration (V.A.) hospitals is opposite to that of nonwhites in short-stay non-federal hospitals. In 1973-1974, nonwhite discharges per 100,000 veterans was 5845.2. This rate was over two and a half times the 2284.0 rate of whites (6,

p. 51). Some bias exists in these rates, because not all veterans seek care in VA hospitals. The veterans population on which the rate is based, therefore, includes members who by self-selection receive care elsewhere (6, p. 46). Since those least able to pay the costs of medical care elsewhere are in the majority, it is understandable that the rates indicate an excess of nonwhite admissions to these hospitals.

In Table 7, hospitalization data for another disadvantaged group, the American Indians, are presented. The discharge rate of the American Indian for the 12 month period from mid 1973 to mid 1974 was 14.7 discharges per 100 Indian population, compared with the 1974 admission rate for the total population of 14.1 (Table 7). It is possible that the hospitalization differential of Indians compared with the rest of the population might be greater if hospitalization rates were age adjusted, since the average age of Indians is lower than that of the rest of the population. The average length of hospital stay of Indians (6.9 days) was considerably lower than that of the U.S. population (8.4) in 1974. The shorter length of stay of Indians compared with the total population is probably due to the younger average age of Indians in comparison to the rest of the population.

3. *Short-stay Hospitalization Involving Surgical Procedures.* "Surgical rates have potential value for monitoring the population's use of services, given the concern in this country about the performance of 'unnecessary' surgery. In addition, there is concern that some population groups are not getting 'necessary' surgery" (1, p. 35). In-hospital surgical procedure rates for the total population increased from 5 per 100 persons in 1963 to 6 per 100 persons in 1970 (See Table 8). Larger increases occurred among lower income groups. The rate for persons living in families with yearly incomes under \$2,000, for example, jumped from 3 surgical procedures per 100 persons in 1963 to 7 surgical procedures in 1970. The highest income group has the lowest surgery rate (5

per 100 persons) while the lowest income group has the highest rate of surgical admissions (7 per 100 persons). Nonwhites and rural farm residents have slightly lower surgical procedure rates.

E. Inpatient Care: Long Term

Most patient contacts with the health care system are for the purpose of receiving acute care on a short-term basis. However, several health problems do require extended medical care. In this section, the utilization patterns occurring in long-term medical care institutions are analyzed. The three types of institutions included are long-term care hospitals, nursing homes, and other long-term medical care institutions.

1. *Long-term hospitals* Long-term hospitals are comprised largely of psychiatric, chronic disease, and tuberculosis hospitals. Of these three, psychiatric hospitals accounted for roughly 80 percent of the total hospitals in 1973 (6, p. 63). Utilization of psychiatric hospitals by the disadvantaged is discussed in Chapter VIII which deals with mental health and will not be repeated here. The remaining 25 percent of long-term inpatient hospital care takes place in those speciality hospitals devoted to rehabilitation, tuberculosis, and chronic diseases (6, p. 64). Comparisons of utilization between the disadvantaged and the rest of the population are presented in Section E-3 of this chapter, where hospital and other long-term care institution data are combined.

2. *Nursing Homes.* Comparative Ratios for whites and all other nursing home residents are presented in Table 9. Rather than the number of residents per 1000 population, the ratio of the number of nursing home residents to 1000 population age 65 and over is used. The population age 65 and over is used as a base rather than total population, because of the age relationships of the inpatient population. Also, a ratio rather than a rate is used, because the numerator, nursing home residents, may include persons under

65 years of age, even though they are not included in the denominator. Utilization of nursing homes by nonwhites is considerably lower than that of whites. The ratio of white nursing home residents (51.9) is almost 50 percent greater than that of all other residents (35.0).

3. *Other Long Term Medical Care Institutions.* In 1967, about 650,000 persons, aged 18 and over, were residents of long-term care institutions, or of schools or homes for the physically or mentally handicapped, excluding nursing homes. These persons made up between 5 and 10 percent of all severely disabled adults in the U.S. in that year (7, p. 2).

The proportions of adults aged 18 and over who were institutionalized in the fall of 1967 are presented in Table 10, disaggregated by selected demographic characteristics. A larger proportion of women, nonwhites, and not married persons are institutionalized relative to their proportion in the population. Nonwhites are considerably overrepresented in psychiatric hospitals, only very slightly overrepresented in chronic disease hospitals, and considerably underrepresented in institutions for the mentally retarded. The underrepresentation of nonwhites in institutions for the mentally retarded raises the question of whether a smaller percentage of nonwhites who are mentally retarded are institutionalized, or if the prevalence of mental retardation is lower among nonwhites.

F. Home Care and Telephone Contacts

In Table 11, the number and rate per 100 population of visits of physicians to the home by selected patient characteristics is presented. The oldest and the youngest age groups, females, whites, and the lowest and highest income groups report more physician visits to their homes than do their counterparts. Persons 65 years and over reported 288.4 physician visits to the home per 1000 population, compared with 68.3 visits among persons under 15 years of age and only 31.4 visits and 46.2 visits for persons 15-44

years and 45-64 years of age. The physician home visit rate to females is higher than that to males: 74.9 visits per 1000 population compared to 64.2 visits. The sex differential in utilization here and elsewhere is confounded by the age differential between the sexes. In 1973, physician visits to the homes of white persons (73.8 visits per 1000 persons) was considerably higher than visits to homes of all other persons (41.7 visits per 1000 population). The highest home physician visit rate (232.3 visits per 1000 population) occurred among the very highest income group (\$25,000 or more family income). Also, high were the rates, in order, for the 2nd, 3rd, and 1st lowest income groups with rates of 131.4, 98.8, and 78.8 home physician visits per 1000 population respectively. The lowest home physician visit rates occurred among the three middle income groups. (33.0, 37.0, and 39.3 visits per 1000 population).

Some of these patient characteristic patterns are similar for telephone contacts with physicians to physician home visits. While the home visit rate was highest for the oldest age group, telephone contacts are highest for the youngest age group (834.9 contacts per 1000 population) followed by the oldest age group (615.9 contacts). Seven hundred and sixty-eight physician telephone contacts were made to females compared with 497.1 contacts to males. More whites (691.5 contacts per 1000 population) contact physicians by telephone than persons of other races (262.9 contacts). Rather than a dip in the rate among middle income groups that was observed for physician visits, an almost continuous decline in the rate of telephone contacts occurs among income groups. The rate varies from 802.9 contacts per 1000 population among persons with family incomes of \$25,000 and over to 551.0 contacts per 1000 population for families with incomes of less than \$3,000. (See Table 12)

G. Regular Source of Care

Information regarding the regular or usual source of medical care obtained by the population is routinely col-

lected by HIS and by health services researchers, because it is important for planning and evaluative purposes. Changes in the pattern of care of the population or sub-groups within the population may be indicative of changes in individual preference, the health care system, or both. For instance, an observed trend toward utilization of hospital outpatient clinics, as a regular source of care as opposed to physician offices, may be the result of one or more of the following:

- (1) a scarcity of physicians;
- (2) less expensive care of clinics;
- (3) easier access of clinics; and
- (4) personal preferences for the clinic and hospital atmosphere.

In fact, such a trend in health services utilization in the U.S. has occurred between 1963 and 1970, according to data collected both by HIS and by CHAS. The proportion of the population reporting a hospital clinic as the regular source of care increased, while the proportion that named a physician and the proportion that reported *no* regular source of care decreased between 1963 and 1970 (Table 13). The trends for the population as a whole generally held for both whites and nonwhites and for each sex, age, and income group. An increase in the proportion reporting no regular source of care between 1963 and 1970 occurred among one population subgroup only—nonwhites. Among nonwhites, this proportion increased from 15 to 16 percent during this period, while the proportion among whites decreased from 12 to 10 percent.

In summary, the most important differences between whites and nonwhites, with regard to regular source of care in 1970, were as follow:

- (a) a lower proportion of nonwhites (51 percent) compared with whites (69 percent) reported a particular physician as their regular source of care. The differential was greater in 1970 (.74) than in 1963 (.84);
- (b) the proportion of nonwhites (30 percent) who report using a

clinic as a regular source of care was almost twice that of whites (16 percent). The differential was smaller in 1970 (1.88) than in 1963 (2.22); and

- (c) the proportion of nonwhites (16 percent) reporting no regular source of care was considerably higher than the proportion of whites (10 percent) with no regular source of care. The differential was greater in 1970 (1.60) than in 1963 (1.25).

The proportion of the reporting population who see an MD as a regular source of care was lowest among low income persons (56 percent) compared with middle income (68 percent) and high income (74 percent) persons. A much higher proportion of low income persons report a clinic as a regular source of health care (24 percent) compared with middle (17 percent) and high (14 percent) income groups.

In summary, then, the most important differences among income groups were as follow:

- (a) a lower proportion of low income persons (56 percent) compared with middle and high income persons (68 percent and 74 percent) reported a particular physician as their regular source of care in 1970;
- (b) the proportion of low income persons (24 percent) who reported a clinic as a regular source of care was almost twice that of the high income group (14 percent), and, also, substantially higher than the middle income group (17 percent); and
- (c) The proportion of low income persons (16 percent) who report no regular source of care was almost twice that of the highest income persons (8 percent) and considerably higher than middle income persons (10 percent).

Trends in the regular source of care for the less educated were similar to those for nonwhites and for the low income population. According to resi-

dence, the rural farm and the central city people were least likely to have a regular source of care, least likely to report an MD as a regular source, and along with the urban population, non-SMSA residents were most likely to report a clinic as their regular source of care (See Table 13).

H. Interpretation of Utilization Trends

In preceding chapters, the health status of the disadvantaged vis-a-vis specific disease entities was compared with that of the rest of the population. Mortality statistics, morbidity measures, and utilization measures were used to describe health status. While mortality and morbidity measures are unquestionably indicators of health status, utilization measures are indicators of several factors, only one of which is health status. These factors may be grouped into the following broad categories for purposes of discussion. First, utilization rates give some indication of the amount of care needed by a population, and, therefore, the health status of the population. Comparisons of these rates, over time or among population groups, may suggest changes in health status and health needs of a given population over time or differences in the health status and health needs of subgroups of a population. Second, utilization of health care services is a reflection of the accessibility of the health care system to all segments within the population served by that system. Third, the health utilization patterns of subgroups of a population are a reflection of the attitudes of those subgroups.

1. *Health Needs and Health Status.* Several measures of health needs and of health status are available. The basic question to be explored in this section is: to what extent are the observed differences in utilization patterns of the disadvantaged, relative to the remainder of the population, explained by differences in the health needs and the health status of the disadvantaged? What has been our observation in this and in earlier chapters

and the observation of others is "...Although the poor have more health problems than the affluent, they do not use a larger share of the health care offered. The reverse is true" (2, p. 7).

The first of two measures of health needs discussed in this section is symptom severity. Judgments rendered by physicians as to the severity of symptoms of patients is used to classify all care received by patients into mandatory care or elective care. Mandatory care is defined as that care for which a person should or must see a physician, as compared with elective care which is defined as preventive care, or relief of symptoms only, or would not be affected by treatment. Among both nonwhites and low income persons, the percentage of visits for mandatory care was greater than that of their white and higher income counterparts. That is, moderately larger proportions (38 percent) of racial minorities and of low income persons (39 percent) seen by physicians have serious medical problems, as compared with whites (31 percent) and to higher income persons (30 percent) (See Table 14).

Another measure, which relates utilization of health services to need for health services is the use-disability ratio. This ratio is calculated by dividing the two-week mean number of physician visits by the two-week mean number of disability days times 100 (8, p. 39). The greater the value of the ratio the greater the amount of health care received (physician visits) relative to need (disability days) for health care. The lower the ratio the greater the likelihood of unmet health needs. When this ratio was calculated and comparisons made among population subgroups, the use of health services, relative to the need for those services, was found to be lower among low income persons and among nonwhites than among high income persons and among whites. A larger difference in the use-disability ratio was observed between different income levels than between different racial groups. Persons below the poverty level make

10.37 physician visits for every 100 disability days compared with 16.37 physician visits for persons above the poverty level. While for racial groups, the ratio obtained for nonwhites was 12.88 compared to 14.84 for whites. These ratios are fully tabulated in Table 15.

To summarize, first, the percentage of visits to physicians for mandatory care was greater among the disadvantaged than the rest of the population. Second, the disadvantaged make fewer visits to physicians per 100 disability days than do the rest of the population. These findings suggest that the lower utilization of the health care system observed among the disadvantaged is not based on a lesser need for health care. Apparently, factors other than health needs are impacting on utilization of the health care system. If utilization were influenced by health needs only, then a drop in utilization could be interpreted as an improvement in health status. Also, if health status does in fact improve as a result of utilization of the health care system, then evidence of improved health status would accompany increased utilization (other things being equal). Under these circumstances, all attempts should be made to increase utilization of the health care system, especially utilization by members with known health disadvantages.

Studies which have attempted to demonstrate a change in health status as a result of comprehensive health care have failed to do so, however (9, 10, 11, 12, 13). Charles Lewis prefaced his description of these studies with the following statement. "... I shall comment on those reports that were published despite their 'negative results,' and wonder how many other chronicles of disappointments are filed in drawers marked 'reject'" (4, p. 470). A statement made by Lewis, which very concisely describes the difficulties encountered in evaluative health services research, is also worth quoting.

"Studies of the impact of health services on the health status of populations are complex, costly,

and time consuming. In addition to the philosophical and methodological problems, there are some statistical realities of life related to the child years of observation necessary to demonstrate significant changes in the outcome measures being used" (14, p. 47).

Other studies have failed to show changes in health status following incremental changes in health services and have recommended that "alternatives to increases in traditional medical care should be explored in programs seeking to improve the health of the population" (15, p. 217).

Before leaving the subject of the impact of medical care on health status, the works of two health care system critics will be briefly mentioned. Rick Carlson in his book, "The End of Medicine," describes the present health care system as having doubtful benefits on health status. Alternative systems, one of which emphasizes environmental improvement (pollution control), are recommended as replacements to medicine (16). Lastly, reference is made to the work of Ivan Illich, who has been referred to as "the genius who provides the focus for our doubts" (17). In "Medical Nemesis," the U.S. health care system is not only found wanting as a mechanism for health improvement, but it is attacked on the grounds that it produces illness. Illich finds iatrogenic (i.e. disease producing) characteristics not only in the medical system, but also in the U.S. cultural and political system (18).

The findings from several studies discussed above have shown that the lower utilization of the health care system by the disadvantaged is not explained by lower levels of health care needs or superior health status. Additional explanations of the lower utilization of the disadvantaged must be found. This discussion has mentioned some of the difficulties inherent in interpreting any change in utilization, given the several factors that influence utilization. Lastly, several studies which failed to demonstrate health improvement resulting from utilization of the health care system

were mentioned. This failure creates difficulty for those who must interpret utilization trends, as well as for those involved in planning health services.

2. *Access.* There is a growing belief in the United States that all people have a right to medical care regardless of their ability to pay for that care. Providing health care to the medically underserved is a high priority national health planning goal.

The book "Equity in Health Services" (19) was directed in purpose to providing an understanding of the factors that influence the distribution and utilization of health services and to provide a better understanding of the barriers to an equitable distribution of health services (19). Some of the factors investigated by Anderson and some findings which have a bearing on the disadvantaged are discussed above. While race was a factor which was found to have an impact on the amount of health care used, attitude was not. Those individuals with negative feelings toward the value of health care tend to use the system about as much as those with positive feelings (19). Income was found to be increasingly less important as a determinant of utilization.

The income barrier to health care has been shown to be a factor (albeit a decreasing factor) in utilization in earlier sections. Other convenience factors that affect access, such as travel time to regular source of care by family income and race, are presented in Table 16. Both racial minorities, as compared with whites, and those below the near poverty level as compared with those above the near poverty level, had between twice and three times the travel time to their regular source of care as did their counterparts. In Table 17, office waiting times at regular source of care by selected characteristics are presented. Both racial minorities and those below the near poverty level had roughly twice the waiting time at their regular source of care than the rest of the population.

The seriousness of the barriers of travel time and waiting time to the receipt of care and to health status has not really been explored by those researchers who collect those data. Odin Anderson rather succinctly described what looks hopeful in the present utilization trends, as well as what problems remain.

"Contrary to what might be expected, given the individual incidents of difficult or no access to health services reported in the media and in "everybody knows" informal conversations, it is worth noting that in general there has been a persistent trend toward the equalization of access regardless of income. Voluntary health insurance, Medicare, and Medicaid have all been factors behind this trend. During the period between 1963 and 1970, Chapter Five suggests that Medicare and Medicaid had an appreciable impact. The use of hospital services clearly indicates that use related to family income now favors the low income groups. The trend in physician services shows a convergence by income groups although a gap remains. When morbidity levels as measured by disability days are related to use, then indications are that the low income group may indeed still not be getting the services they should if such a measure of need and its fulfillment is accepted as a valid one" (20, p. 266).

3. *Attitudes.* In this section a very brief discussion of attitudes toward health services is attempted. The statements are based on studies which use health interview techniques, as well as those in which current medical sociological models are developed. Studies which have attempted to explain differential health services utilization on the basis of cost barriers alone have failed to do so. Factors other than cost, other than additional access factors, and other than health status appear to influence health service utilization. These other factors appear to be attitudinal. Researchers have observed that at-

titudes both toward health and toward the health care system are different among the poor when compared to the rest of the population. How individuals perceive illness apparently influences whether or not they seek health care. Differences in perception of illness have been observed among social and occupational classes in the United States. A study by Koos, for instance, indicated that fewer than 25 percent of lower-class respondents recognized symptoms such as loss of appetite, persistent coughing, and shortness of breath as symptoms. (21)

Once an individual recognizes a symptom as requiring medical attention, whether or not he seeks attention is influenced, in part, by his attitude toward the health care system. To some social classes and cultures the American Medical Care System is seen as cold, impersonal, and incomprehensible.

The following summary and rationale of the attitudes of the poor may partially explain their utilization patterns. This list of attitudes appeared in the government publications, *Low-Income Life Styles* (22), edited by L. M. Ireland.

- "1. the attitude of fatalism—helplessness or lack of control over events in one's life;
2. preferences for particularistic and personalized relationships, as opposed to more business-like, formal exchanges;
3. more materialistic, concrete modes of thinking and talking."

Poor people she (Ireland) finds are less articulate than the better educated, upper-class members. Their interpersonal exchanges involve smaller amounts of symbolic, linguistic behavior. Their habitual language is centered on concrete, rather than abstract, ideas. It is, therefore, extremely difficult for them to understand diagnoses and treatment procedures, and so the tendency is to avoid contact with physicians and hospitals whenever possible" (2, pp. 10-11).

Table 1

Percent seeing a physician during the survey year by selected characteristics: 1958, 1963 and 1970

Characteristic	Percent Seeing a Physician (42)		
	1958	1963	1970
Sex (54)			
Male	62	62	65
Female	70	68	71
Age (1)			
1-5	73	75	75
6-17	64	58	62
18-34	68	67	70
35-54	64	65	67
55-64	66	68	73
65 and over	68	68	76
Family income (25)			
Low	a	56	65
Middle	—	64	67
High	—	71	71
Race (49)			
White	—	68	70
Nonwhite	—	49	58
Education of head (10)	a		
8 years or less	—	56	62
9-11 years	—	63	66
12 years	—	69	69
13 years or more	—	76	76
Residence (52)			
SMSA, central city	a		65
SMSA, other urban	—	66	72
Urban, non-SMSA	—		71
Rural, nonfarm	—	66	68
Rural, farm	—	57	62
Total	66	65	68

^aNot available for 1958.

Source: "Two Decades of Health Services" by Ronald Andersen, Odin Anderson, and Joanna Lion, Copyright 1976, Ballinger Publishing Co.

Table 2

Mean number of physician visits per person-year (40) by selected characteristics:
1958, 1963 and 1970

Characteristic	Mean Number of Physician Visits (44)		
	1958	1963	1970
Sex (54)			
Male	3.5	3.8	3.6
Female	5.3	5.0	4.5
Age (1)			
0-5	4.6	3.9	4.2
6-17	2.7	2.5	2.2
18-34	4.1	5.0	4.2
35-54	4.7	4.9	4.0
55-64	5.1	5.7	6.3
65 and over	7.4	6.8	6.4
Family income (25)			
Low	— ^a	4.4	4.9
Middle	—	4.3	3.9
High	—	4.6	3.6
Race (49)			
White	— ^a	4.7	4.1
Nonwhite	—	3.2	3.6
Education of head (10)			
8 years or less	— ^a	3.9	4.2
9-11 years	—	4.7	3.6
12 years	—	4.7	3.6
13 years or more	—	5.3	4.5
Residence (52)			
SMSA, central city	— ^a		4.2
SMSA, other urban	—	4.6	4.2
Urban, non-SMSA	—		4.4
Rural, nonfarm	—	4.4	3.7
Rural, farm	—	3.6	3.4
Total	4.4	4.4	4.0

^aNot available for 1958.

Source: "Two Decades of Health Services" by Ronald Andersen, Odin Anderson, and Joanna Lion, Copyright 1976, Ballinger Publishing Co.

Table 3Utilization of health services by selected characteristics according to NCHS data^a: 1970 and 1974

Characteristic	Type of Utilization									
	Percent seeing a physician		Mean number of physician visits		Hospital discharges per 100 persons per year		Average length of hospital stay		Percent seeing a dentist	
	1970	1974	1970	1974	1970	1974	1970	1974	1970	1974
Age										
0-5	83	88	5.9	6.3	8.9	10.4	7.3	6.4	17	21
6-16	64	68	2.9	3.2	6.0	5.5	5.1	5.1	61	63
17-24	76	77	4.6	4.5	16.9	14.0	5.9	5.6	56	57
25-44	73	76	4.6	5.0	15.0	15.6	6.9	7.4	52	55
45-64	70	74	5.2	5.0	14.7	17.5	11.1	10.2	44	47
65 and over	73	77	6.3	6.7	23.4	25.4	13.1	11.7	26	29
Sex										
Male	69	71	4.1	4.3	10.9	12.1	10.0	9.8	46	48
Female	75	79	5.1	5.6	15.5	16.0	7.6	7.4	48	51
Family income										
Under \$2,000	71	76	5.3	5.9	19.0	20.8	11.5	9.7	29	36
\$2,000-3,999	69	76	5.1	5.3	17.1	21.6	10.1	10.9	29	32
\$4,000-6,999	69	74	4.4	5.0	14.5	17.0	9.0	8.8	37	36
\$7,000-9,999	72	75	4.3	5.1	12.4	15.2	7.4	7.7	46	42
\$10,000-14,999	74	75	4.6	4.6	11.7	12.8	7.4	8.0	56	51
\$15,000 and over	77	78	4.9	4.9	10.8	10.7	8.0	6.8	68	64
Race										
White	73	76	4.8	5.0	13.5	14.2	8.3	8.2	49	51
Nonwhite	65	71	3.8	4.4	11.4	13.7	10.7	9.8	30	35
Education of head										
8 years or less	65	70	4.4	4.8	14.7	17.7	10.0	10.1	29	31
9-11 years	68	72	4.4	4.6	14.3	15.0	8.7	9.0	39	41
12 years	74	76	4.6	4.8	12.8	13.6	7.8	7.2	52	52
13 years or more	79	81	5.1	5.4	11.7	11.5	7.6	7.2	65	65
Residence										
SMSA	73	76	4.8	5.2	12.6	13.0	9.2	8.9	49	52
Non-SMSA, nonfarm	71	74	4.5	4.5	14.8	17.0	7.7	7.6	42	44
Non-SMSA, farm	65	68	3.3	4.1	11.5	13.8	7.5	6.7	43	46
Total	72	75	4.6	4.9	13.3	14.1	8.6	8.4	47	49

^aThe sources for 1970 and 1974 data by age and sex are NCHS (1972a) and NCHS (1975), respectively. The remainder are unpublished data provided by Ronald Wilson, Division of Analysis, National Center for Health Statistics.

Source: "Two Decades of Health Services" by Ronald Andersen, Odin Anderson, and Joanna Lion, Copyright 1976, Ballinger Publishing Co.

Table 4

Rate of visits to physicians' offices by patient's age, according to patient's sex and color and region and location of visit: United States, May 1973-April 1974

Sex and color and region and location of visit	Total	Age				
		Under 15 years	15-24 years	25-44 years	45-64 years	65 years and over
Color and sex	Number of visits per person					
Total	3.1	2.3	2.6	3.2	3.8	4.9
Male	2.5	2.3	1.9	2.1	3.2	4.5
Female	3.7	2.2	3.4	4.2	4.3	5.2
White	3.2	2.4	2.7	3.1	3.8	5.0
Male	2.6	2.5	2.0	2.1	3.2	4.6
Female	3.7	2.3	3.4	4.1	4.3	5.3
All other	2.6	1.5	2.4	3.4	3.7	4.0
Male	2.0	1.4	1.3	2.1	3.4	3.7
Female	3.2	1.6	3.3	4.3	4.0	4.2
Region						
Northeast	3.1	2.4	2.8	3.3	3.6	4.3
North Central	3.0	2.2	2.6	3.0	3.6	4.9
South	3.1	2.4	2.6	3.2	3.8	4.8
West	3.2	1.9	2.6	3.3	4.2	6.2
Location of Visits						
Metropolitan Area	3.4	2.3	2.8	3.6	4.2	5.4
Male	2.7	2.4	2.0	2.3	3.5	5.0
Female	4.0	2.3	3.7	4.7	4.8	5.6
Nonmetropolitan Area	2.5	2.1	2.2	2.2	2.9	4.1
Male	2.2	2.2	1.6	1.6	2.5	3.6
Female	2.9	1.9	2.8	2.8	3.2	4.5

Source: National Center for Health Statistics: Unpublished Data from the National Ambulatory Medical Care Survey.

Table 5

Number and rate per 1,000 population of physician attended visits in short-stay general hospital outpatient clinics and emergency rooms by selected patient characteristics: United States, 1973

Characteristic	Visits					
	Total		Outpatient clinics		Emergency rooms	
	Number in thousands ¹	Rate ²	Number in thousands ¹	Rate ²	Number in thousands ¹	Rate ²
Total	110,018	534.6	69,947	339.9	40,071	194.7
Age						
Under 15 years	28,964	519.9	14,831	266.2	14,133	253.7
15-44 years	46,434	531.9	27,398	313.8	19,036	218.1
45-64 years	23,528	553.2	18,524	435.5	5,004	117.6
65 years and over	11,092	547.7	9,195	454.0	1,897	93.7
Sex						
Male	49,702	500.8	29,347	295.7	20,355	205.1
Female	60,316	566.0	40,600	381.0	19,716	185.0
Color						
White	82,676	459.8	50,824	282.7	31,852	177.1
All other	27,342	1,052.0	19,123	735.8	8,219	316.2
Family income						
Less than \$3,000	13,720	838.2	10,053	614.1	3,667	224.0
\$3,000-\$4,999	14,846	800.8	10,868	586.2	3,978	214.6
\$5,000-\$6,999	11,944	554.5	7,073	328.4	4,871	226.1
\$7,000-\$9,999	14,682	488.1	9,524	316.6	5,158	171.5
\$10,000-\$14,999	24,185	474.9	14,210	279.0	9,975	195.9
\$15,000-\$24,999	17,677	448.3	9,651	244.8	8,026	203.6
\$25,000 or more	5,898	417.9	3,651	258.7	2,247	159.2
Unknown	7,066	—	4,916	—	2,149	—

¹Figures may not add to totals due to rounding.

²Denominator for rates is civilian noninstitutionalized population, characteristic specific, for July 1, 1973.

Source: The Nation's Use of Health Resources 1976 Edition, U.S. Dept. of Health, Education, and Welfare, Public Health Service, Health Resources Administration, National Center for Health Statistics, Division of Health Resources Utilization Statistics DHEW Publication No. (HRA) 77-1240, p. 30.

Table 6

Hospital admissions per 100 person-years by selected characteristics: 1953, 1958, 1963 and 1970

Characteristic	Hospital Admissions per 100 Person-Years (30)			
	1953	1958	1963	1970
Sex (54)				
Male	9	9	10	11
Female	15	15	15	16
Age (1)				
0-5	8	10	8	11
6-17	8	6	6	6
18-34	16	20	19	19
35-54	12	11	14	12
55-64	12	10	17	19
65 and over	13	18	18	21
Family income (25)				
Under \$2,000	12	14	16	19
\$2,000-\$3,499	12	12	12	15
\$3,500-\$4,999	12	14	12	17
\$5,000-\$7,499	12	12	14	16
\$7,500-\$9,999			14	16
\$10,000-\$12,499	11	10	11	12
\$12,500-\$14,999			10	11
\$15,000 and over				9
Race (49)				
White	— ^a	— ^a	— ^a	15
Nonwhite	—	—	—	11
Residence (52)				
Large urban	10	11	10	12
Other urban	11	14	13	14
Rural, nonfarm	14	14	15	15
Rural, farm	12	13	11	13
Total	12	12	13	14

^aNot available for three earlier studies.

Source: "Two Decades of Health Services" by Ronald Andersen, Odin Anderson, and Joanna Lion, Copyright 1976, Ballinger Publishing Co.

Table 7

Number and rate per 1,000 service population¹ of discharges, days of care, and average length of stay in Indian Health Service hospitals by selected patient characteristics: United States, June 30, 1973-July 1, 1974

Characteristic	Discharges		Days of care		Average length of stay in days
	Number ²	Rate ³	Number ²	Rate ³	
Total	71,800	146.9	492,400	1,007.4	6.9
Age					
Under 15 years	18,100	87.5	111,200	537.5	6.1
15-44 years	37,000	195.8	217,000	1,148.1	5.9
45-64 years	10,000	157.2	94,100	1,479.6	9.4
65 years and over	6,500	221.8	69,700	2,378.8	10.7
Unknown	100	—	400	—	4.0
Sex					
Male	28,800	120.1	227,000	946.6	7.9
Female	43,000	172.7	265,400	1,065.9	6.2
Reasons for use					
Well care ⁴	5,900	12.1	34,900	71.4	5.9
All ICDA diagnostic classes of sick care ⁵	65,900	134.8	457,500	936.0	6.9
Infective and Parasitic Diseases I	4,300	8.8	39,600	81.0	9.2
Neoplasms II	1,400	2.9	15,600	31.9	11.1
Endocrine, Nutritional, and Metabolic Diseases III	1,600	3.3	17,900	36.6	11.2
Diseases of the Blood and Blood-Forming Organs IV	300	0.6	2,500	5.1	8.3
Mental Disorders V	4,400	9.0	31,800	65.1	7.2
Diseases of the Nervous System and Sense Organs VI	3,900	8.0	28,800	58.9	7.4
Diseases of the Circulatory System VII	2,900	5.9	27,000	55.2	9.3
Diseases of the Respiratory System VIII	7,300	14.9	44,500	91.0	6.1
Diseases of the Digestive System IX	4,400	9.0	38,600	79.0	8.8
Diseases of the Genitourinary System X	3,100	6.3	19,700	40.3	6.4
Complications of Pregnancy, Childbirth, and the Puerperium XI	13,300	27.2	51,500	105.4	3.9
Diseases of the Skin and Subcutaneous Tissue XII	2,100	4.3	17,700	36.2	8.4
Diseases of the Musculoskeletal System and Connective Tissue XIII	1,200	2.5	13,200	27.0	11.0
Congenital Anomalies XIV	600	1.2	6,300	12.9	10.5
Certain Causes of Perinatal Morbidity and Mortality XV	900	1.8	8,400	17.2	9.3
Symptoms and Ill-Defined Conditions XVI	4,300	8.8	23,300	47.7	5.4
Accidents, Poisonings, and Violence XVII	9,900	20.3	71,100	145.5	7.2

¹The Indian Health Service "service" population is defined as the resident Indian population in selected counties on or near Indian reservations in 25 States. Services do not reflect those rendered care in contract community hospitals.

²Figures may not add to totals due to rounding.

³Denominator for rates is the estimated 488,000 Indians who comprised the service population in fiscal year 1974.

⁴Well care includes diagnoses recorded in codes 793 (Section XVI) and Y00-Y13 of the ICDA.

⁵Show first-listed diagnosis coded and classified according to the *Eighth Revision International Classification of Diseases, Adapted for Use in the United States*.

Source: Office of Program Statistics, Division of Resource Coordination, Indian Health Service: Unpublished data fiscal year 1974.

Table 8

Mean in-hospital surgical procedures per 100 person-years by selected characteristics: 1958, 1963 and 1970

Characteristic	In-Hospital Surgical Procedures per 100 Person-Years (56)		
	1958	1963	1970
Sex (54)			
Male	4	4	5
Female	5	6	7
Age (1)			
0-5	3	3	6
6-17	4	4	3
18-34	5	5	7
35-54	5	6	6
55-64	5	6	9
65 and over	7	5	7
Family income (25)			
Under \$2,000	5	3	7
\$2,000-\$3,499	4	4	6
\$3,500-\$4,999	5	4	7
\$5,000-\$7,499	5	6	8
\$7,500-\$9,999		7	6
\$10,000-\$12,499	4	5	6
\$12,500-\$14,999		4	5
\$15,000 and over			5
Race (49)			
White	— ^a	— ^a	7
Nonwhite	—	—	6
Residence (52)			
Large urban	5	5	6
Other urban	5	5	6
Rural, nonfarm	5	6	6
Rural, farm	3	4	5
Total	5	5	6

^aNot available for 1958 and 1963.

Source: "Two Decades of Health Services" by Ronald Andersen, Odin Anderson, and Joanna Lion, Copyright 1976, Ballinger Publishing Co.

Table 9

Number and ratio of nursing home¹ residents of all ages to 1,000 population age 65 and over by selected patient characteristics: United States, 1973-74

Characteristic	Residents	
	Number ²	Ratio ³
Total	1,075,800	50.4
Under 65 years	114,300	0.6
65-74 years	163,100	12.3
75-84 years	384,900	59.3
85 years and over	413,600	262.7
Sex		
Male	318,100	36.1
Female	757,700	60.4
Color		
White	1,010,400	51.9
All other ⁴	65,400	35.0
Primary diagnosis at admission		
Hardening of arteries	219,900	10.3
Stroke	132,800	6.2
Mental disorders	122,100	5.7
Senility, old age, and other ill-defined conditions	110,700	5.2
Accidents, poisonings, and violence	95,700	4.5
Diseases of the musculoskeletal system and connective tissue	62,600	2.9
Diseases of the nervous system and sense organs	60,500	2.8
Heart attack	59,600	2.8
Endocrine, nutritional, and metabolic diseases	44,700	2.1
Other circulatory system diseases	34,300	1.6
Other diagnosis, not specified	24,800	1.2
Diseases of the respiratory system	23,100	1.1
Neoplasms	24,200	1.1
Diseases of the digestive system	21,800	1.0
Diseases of the genitourinary system	15,300	0.7
Diseases of the blood and blood-forming organs	6,700	0.3
Diseases of the skin and subcutaneous tissue	5,000	0.2
Congenital anomalies	2,800	0.1
Infective and parasitic diseases	2,300	0.1
Diagnosis not available	6,900	0.3

¹Based on a sample of homes classified as nursing care homes and personal care homes with nursing.

²Figures may not add to totals due to rounding.

³Denominator for ratios is resident population aged 65 and over, July 1, 1973.

⁴Includes approximately 12,000 persons classified as Spanish Americans with color not specified.

Source: Division of Health Resources Utilization Statistics, National Center for Health Statistics: Unpublished data from the 1973-74 National Nursing Home Survey.

Source: The Nation's Use of Health Resources 1976 Edition, U.S. Dept. of Health Education, and Welfare, PHS, HRA, National Center for Health Statistics, Division of Health Resources Utilization Statistics DHEW Publication No. (HRA) 77-1240, p. 74.

Table 10

Selected demographic characteristics by type of institution and patient's age:
 Percentage distribution of institutionalized adults aged 18 and over, fall 1967

Selected characteristics	Total	Type of institution			Patient's age	
		Psychi- atric	Mentally retarded	Chronic disease	18-64	65 and over
Total number (in thousands)	648	422	111	115	460	181
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Sex						
Men	54.0	53.6	53.0	56.3	57.5	45.2
Women	46.0	46.4	47.0	43.7	42.5	54.8
Race						
White	83.9	81.4	92.1	85.4	82.4	89.2
Other than white	16.1	18.6	7.9	14.6	17.6	10.8
Marital status						
Married	18.5	21.1	(¹)	26.3	17.6	20.6
Widowed	13.7	12.7	.8	30.0	4.6	37.0
Divorced	8.1	10.1	(¹)	8.8	8.8	6.9
Separated	4.5	5.8	(¹)	4.1	4.8	3.8
Never married	54.1	49.1	97.9	30.1	63.4	30.8
Not reported	1.0	1.2	.5	.7	.9	1.0

¹Less than 0.5 percent.

Source: The 1967 National Survey of Institutionalized Adults, Residents of Long-term Medical Care Institutions. U.S. Dept. of HEW, Social Security Administration, Office of Research and Statistics, DHEW Publication No. (SSA) 75-11803, p. 30.

Table 11

Number and rate per 1,000 population of visits of physicians to the home¹ by selected patient characteristics: United States, 1973

Characteristic	Visits	
	Number	Rate ²
Total	14,356,700	69.8
Age		
Under 15 years	3,806,500	68.3
15-44 years	2,744,500	31.4
45-64 years	1,965,700	46.2
65 years and over	5,840,000	288.4
Sex		
Male	6,372,700	64.2
Female	7,984,000	74.9
Color		
White	13,273,600	73.8
All other	1,083,100	41.7
Family income ³		
Less than \$3,000	1,290,300	78.8
\$3,000-\$4,999	2,436,400	131.4
\$5,000-\$6,999	2,127,200	98.8
\$7,000-\$9,999	994,000	33.0
\$10,000-\$14,999	1,885,400	37.0
\$15,000-\$24,999	1,548,000	39.3
\$25,000 or more	3,278,700	232.3
Unknown	796,700	—

¹Includes wherever patient staying other than in an institutional setting.

²Denominator for rates is civilian noninstitutionalized population, July 1, 1973.

³Figures may not add to total due to rounding.

Source: Division of Health Interview Statistics, National Center for Health Statistics: Unpublished data from the 1973 Health Interview Survey.

Table 12

Number and rate per 1,000 population of physician telephone contacts¹ with patients by selected patient characteristics: United States, 1973

Characteristic	Telephone contacts	
	Number ²	Rate ³
Total	131,170,000	637.4
Age		
Under 15 years	46,491,700	834.5
15-44 years	49,283,200	564.5
45-64 years	22,922,400	538.9
65 years and over	12,473,000	615.9
Sex		
Male	49,333,700	497.1
Female	81,837,000	768.0
Color		
White	124,337,400	691.5
All other	6,833,300	262.9
Family income		
Less than \$3,000	9,019,200	551.0
\$3,000-\$4,999	10,111,800	545.4
\$5,000-\$6,999	10,051,000	466.6
\$7,000-\$9,999	18,684,000	621.1
\$10,000-\$14,999	38,384,000	753.7
\$15,000-\$24,999	27,408,300	695.1
\$25,000 or more	11,330,400	802.9
Unknown	6,182,000	—

¹Refers to advice given in a telephone call by the physician directly or through a nurse. Calls for appointments excluded.

²Figures may not add to total due to rounding.

³Denominator for rates is civilian noninstitutionalized population, July 1, 1973.

Source: Division of Health Interview Statistics, National Center for Health Statistics: Unpublished data from the 1973 Health Interview Survey.

Table 13

Regular Source of medical care by selected characteristics: 1963 and 1970

Characteristic	Source of Regular Care								Total Percent 1963 and 1970
	Percent M.D.		Percent clinic		Percent osteopath, other		Percent no regular care		
	1963	1970	1963	1970	1963	1970	1963	1970	
Sex									
Male	71	65	11	18	5	4	14	13	100
Female	74	69	11	17	4	5	11	9	100
Age									
1-5	78	69	11	21	3	4	8	6	100
6-17	72	67	13	20	5	5	10	8	100
18-34	69	65	10	18	4	4	17	13	100
35-54	72	69	9	14	5	4	14	13	100
55-64	75	67	9	16	4	5	12	12	100
65 and over	75	69	9	16	3	4	13	11	100
Family Income ¹									
Low	63	56	17	24	4	4	16	16	100
Middle	75	68	10	17	4	5	11	10	100
High	75	74	7	14	6	4	12	8	100
Race									
White	74	69	9	16	5	5	12	10	100
Racial Minority	62	51	20	30	3	3	15	16	100
Education of head									
Less than 9 yrs.	69	64	13	19	4	4	14	13	100
9-11 years	72	60	11	23	4	5	13	12	100
12 years	76	72	9	14	4	6	11	8	100
13 years or more	77	72	8	16	3	2	12	10	100
Residence									
SMSA, central city		58		23		4		15	100
SMSA, other urban	71	73	67	11	13	4	4	14	11
Urban, non-SMSA		72		20		1		7	100
Rural non-farm	76	70		9	15	4	7	11	8
Rural farm	77	65		9	20	3	3	11	12
Total	72	67	11	18	4	4	13	11	100

¹ See Table D.

Source: Reprinted with permission from "Two Decades of Health Services" by Ronald Andersen, Odin Anderson, and Joanna Lion, Copyright 1976, Ballinger Publishing Company Table 1-1, p. 17.

Table 14

Severity of conditions treated by a physician during the year by selected characteristics: 1970

Characteristics	Percent Treated for Conditions Requiring:			
	Mandatory Care Only	Both Mandatory and Elective Care	Elective Care Only	Total
Sex				
Male	30%	30%	40%	100%
Female	33	33	35	101
Age				
0-5	15	32	53	100
6-17	23	23	54	100
18-34	32	34	34	100
35-54	31	35	33	99
55-64	47	32	21	100
65 and over	50	34	15	99
Family income				
Above near poverty	30	32	38	100
Below near poverty	39	29	33	101
Race				
White	31	32	37	100
Racial Minority	38	23	39	101
Education of head				
Less than 9 years	39	31	30	100
9-11 years	32	31	37	100
12 years	30	32	39	101
13 years or more	27	33	40	100
Residence				
SMSA, central city	33	32	35	100
SMSA, other urban	27	32	40	99
Urban, non-SMSA	32	31	37	100
Rural nonfarm	32	31	37	100
Rural farm	38	29	33	100
Total	31%	32%	37%	100%

Mandatory Care: Person should or must see a doctor for condition. Elective Care: for preventive care, relief of symptoms or would not be affected by treatment.

Source: Reprinted with permission from TWO DECADES OF HEALTH SERVICES by Ronald Andersen, Odin Anderson, and Joanna Lion, Copyright 1976 Ballinger Publishing Company Table 1-1, p. 27

Table 15

Physician Visits in Two Weeks per 100 Disability Days in Two Weeks, Mean Physician Visits and Mean Disability Days for Those With One or More Disability Days by Income Level and Race, U.S. 1970

Characteristic	Use-Disability Ratio	Mean Physician Visits for Those With One or More Disability Days	Mean Disability Days for Those With One or More Disability Days
Race			
White	14.84	.80	5.39
Nonwhite	12.88	.72	5.59
Poverty Level			
Above	16.37	.82	5.01
Below	10.37	.68	6.56

Note: The above data were obtained through surveys conducted by the Center for Health Administration Studies, U. of Chicago. The sample consisted of 3,880 families with 11,619 individuals. It was attempted to make the sample representative of the U.S. population.

Source: Aday, Lu Ann, and Ronald Andersen, *Development of Indices of Access to Medical Care*, Health Administration Press, U. of Michigan, Ann Arbor, Michigan, 1974, Table 12.

Table 16

Travel time to regular source of care by selected characteristics of population-at-risk, 1970

Characteristic	Travel Time				Total Percent
	Percent less than 15 minutes	Percent 15 to 30 minutes	Percent 31 to 60 minutes	Percent more than one hour	
Age					
1-5	51	39	9	1	100
6-17	51	41	7	1	100
18-34	52	37	9	2	100
35-54	55	35	8	2	100
55-64	47	40	11	3	101 ^a
65 and over	47	33	13	3	101 ^a
Sex					
Male	52	38	9	2	101 ^a
Female	51	39	9	2	101 ^a
Race					
White	54	37	8	2	101 ^a
Racial Minority	35	46	16	4	101 ^a
Residence					
SMSA, central city	51	40	8	2	101 ^a
SMSA, other urban	58	34	7	1	100
Urban, non-SMSA	70	23	6	2	101 ^a
Rural, nonfarm	44	44	10	2	100
Rural farm	21	54	21	4	100
Near Poverty level					
Above	54	38	7	1	100
Below	42	39	16	4	101 ^a
Total	51	38	9	2	100 ^b

^a Does not add up to 100 because of rounding error.^b Percent table N is of U.S. population equals 87 percent who do not have a regular source of care or NA equals 13Source: Aday, Lu Ann, and Ronald Andersen, *Development of Indices of Access to Medical Care*, Health Administration Press, U of Michigan, Ann Arbor, Michigan, 1974, Table 3, p. 22
Copyright. Reprinted by permission

Table 17

Office waiting time at regular source of care by selected characteristics of population-at-risk

Characteristic	Office Waiting Time				Total Percent
	Percent immediate	Percent 1 to 30 minutes	Percent 31 to 60 minutes	Percent more than one hour	
Age					
1-5	8 *	52	22	18	100
6-17	6	48	25	22	101 ^a
18-34	7	53	23	18	101 ^a
35-54	7	49	27	17	100
55-64	9	43	23	24	99 ^a
65 and over	6	47	26	22	101 ^a
Sex					
Male	7	50	24	19	100
Female	6	48	25	20	99 ^a
Race					
White	7	51	24	18	100
Racial Minority	3	36	28	33	100
Residence					
SMSA, central city	8	47	21	25	101 ^a
SMSA, other urban	7	58	24	11	100
Urban, non-SMSA	6	49	27	18	100
Rural nonfarm	7	47	24	22	100
Rural farm	4	29	39	28	100
Near Poverty level					
Above	8	53	24	16	101 ^a
Below	4	36	27	33	100
Total	7	49	24	20	100 ^b

* Does not add up to 100 because of rounding error

^a Percent table N is of U.S. population equals 87 percent who do not have a regular source of care or NA equals 13Source: Aday, Lu Ann, and Ronald Andersen, *Development of Indices of Access to Medical Care*, Health Administration Press, U of Michigan, Ann Arbor, Michigan, 1974, Table 6, p. 27. Copyright. Reprinted by permission**References**

1. Andersen, R., Lion, J., Anderson, O. W. Two Decades of Health Services: Social Survey Trends in Use and Expenditure. Ballinger Publishing Co., Cambridge, Mass., 1976.
2. Kane, R. L., Kasteler, J. M., Gray, R. M. The Health Gap, Medical Services and the Poor. Springer Publishing Company, New York, 1976.
3. U.S. P.H.S. Health Services Administration, Neighborhood Health Centers: Summary of Project Data, Report 9, Fourth Quarter 1974.
4. Blue Cross Association of Greater New York: Highlights of preliminary data. Department of Research and Special Studies, ACS Report No. 1, October, 1974.
5. Blue Cross Association of Greater New York: Small Area Utilization and inter-area mobility for ambulatory care. Department of Research and Special Studies, ACS Report No. 5, February, 1976.
6. U.S. Public Health Service: The Nation's Use of Health Resources 1976 Edition. DHEW Publication No. (HRA) 77-1240. U.S. Government Printing Office, Washington, D.C., 1976.
7. U.S. Social Security Administration: The 1967 National Survey of Institutionalized Adults, Residents of Long-term Medical Care Institutions. DHEW Publication No. (SSA) 75-11803. U.S. Government Printing Office, Washington, D.C. 1974.

8. Aday, L., Andersen, R. Development of Indices of Access to Medical Care. Health Administration Press, Ann Arbor, 1975.
9. Scrimshaw, N. S., Guzman, M. A., Flores, M., et al: Nutrition and Infection field studies. Guatemalan villages, 1959-1964: V. Disease incidence among preschool children under natural village conditions, with improved diet, and with medical and public health services. Arch. Environ. Health 16:223-234, 1968.
10. Hanchett, E.: A public health home nursing program for outpatients with heart diseases. Public Health Rep. 82:683-688, 1967.
11. Kelly, D. N.: Experience with a program of coverage for diagnostic procedures provided in physicians' offices and hospital outpatients departments: Maryland Blue Cross and Blue Shield plans, Inquiry 2:28-44, 1965.
12. Steep, M. A., Tilley, T. J.: Outpatient diagnostic benefits and the effects on inpatient experience: A three part study. Inquiry 2:3-12, 1965.
13. Lewis, C. E., Keairnes, H.: Controlling costs of medical care by expanding insurance coverage. New Eng. J. Med. 282:1405-1412, 1970.
14. Lewis, C.: What is the evidence? Amer. J. Dis. Child 122:469-474, December 1971.
15. Benham, L., Behnam, A.: The impact of incremental medical services on health status, 1963-1970, In *Equity in Health Services, Empirical Analysis in Social Policy*, Andersen, Kravits, Anderson (Eds.). Ballinger Publishing Company, Cambridge, Mass., 1975.
16. Carlson, R. J.: The end of medicine. Wiley, 1975.
17. Cohen, N. M., Backett, E. M.: "Medical Nemesis", Book Review of Medical Nemesis by Ivan Illich, Lancet 2. No. 7895, pp. 1503-4, 1974.
18. Illich, I.: Medical Nemesis: The expropriation of health, Calder & Boyars, London, 1975.
19. Kravits, J.: A summary of findings, In *Equity of Health Services, Empirical Analysis in Social Policy*, Andersen, Kravits, Anderson (Eds.) Ballinger Publishing Company, Cambridge, Mass., 1975.
20. Anderson, O. W.: Public policy implications, In *Equity in Health Services, Empirical Analysis in Social Policy*, Andersen, Kravits, Anderson (Eds.) Ballinger Publishing Company, Cambridge, Mass., 1975.
21. Koos, E. L., The Health of Regionville: What the People Thought and Did About It, Hafner, New York, 1967.
22. Irelan, L. M., ed., Low Income Life Styles, U.S. Department of HEW, Social and Rehabilitation Service, Washington, D.C.: U.S. Government Printing Office, 1972.

List of Tables

Table 1 Percent seeing a physician during the survey year by selected characteristics: 1958, 1963, and 1970 **237**

Table 2 Mean number of physician visits per person-year (40) by selected characteristics: 1958, 1963, and 1970 **238**

Table 3 Utilization of health services by selected characteristics according to NCHS data: 1970 and 1974 **239**

Table 4 Rate of visits to physicians' offices by patient's age, according to patient's age, according to patient's sex and color and region and location of visit: U.S. May 1973-April 1974. **240**

Table 5 Number and rate per 1,000 population of physician attended visits in short-stay general hospital outpatient clinics and emergency rooms by selected patient characteristics: United States, 1973 **241**

Table 6 Hospital admissions per 100 person-years by selected characteristics: 1953, 1958, 1963, 1970 **242**

Table 7 Number and rate per 1,000 service population of discharges, days of care, and average length of stay in Indian Health Service hospitals by selected patient characteristics: United States, June 30, 1973-July 1, 1974 **243**

Table 8 Mean in-hospital surgical procedures per 100 person-years by selected characteristics: 1958, 1963, and 1970 **244**

Table 9 Number and ratio of nursing home residents of all ages to 1,000 population age 65 and over by selected patient characteristics: United States, 1973-74 **245**

Table 10 Selected demographic characteristics by type of institution and patient's age: Percentage distribution of institutionalized adults age 18 and over, fall 1967 **246**

Table 11 Number and rate per 1,000 population of visits of physicians to the home by selected patient characteristics: U.S., 1973 **247**

Table 12 Number and rate per 1,000 population of physician telephone contacts with patients by selected patient characteristics: United States, 1973 **248**

Table 13 Regular source of medical care by selected characteristics: 1963 and 1970 **249**

Table 14 Severity of conditions treated by a physician during the year by selected characteristics: 1970 **250**

Table 15 Physician visits in two weeks per 100 disability days in two weeks, mean physician visits and mean disability days for those with one or more disability days by income level and race, U.S. 1970 **250**

Table 16 Travel time to regular source of care by selected characteristics of population-at-risk, 1970 **251**

Table 17 Office waiting time at regular source of care by selected characteristics of population-at-risk, **252**

Chapter XII

Financial Expenditures For Health Services

Contents

- A. Overview **257**
- B. Introduction **257**
- C. Mean Health Expenditures **258**
- D. Health Insurance Coverage **258**
- E. Out-of-Pocket Expenses **259**
- F. Public Health Spending—The Aged **259**
- G. Public Health Spending—The Poor **261**
- H. Public Health Spending—The Young **263**

References **274**

List of Tables **275**

List of Figure **275**

Chapter XII

Financial Expenditures For Health Services

A. Overview

In this chapter health care expenditures of the disadvantaged are compared with those of the rest of the population. Personal health care expenditures in the United States reached \$552 per person in 1976. While racial and income breakdowns are not available for 1976, they are available for 1970, when estimated personal health care expenditures were \$248 per person. In that year mean health care expenditures of racial minorities were 37 percent lower than those of whites, \$162 compared with \$258. Conversely, mean health expenditures of low income persons were 16 percent *higher* than those of higher income persons. The lowest health care expenditures were observed among these three groups of persons: 1) nonwhites; 2) rural children with family incomes of less than \$6000; and 3) middle income, \$6,000-\$10,999, persons under 65 in central cities.

The fourfold increase in per capita personal health care expenditures from 1950 to 1970 was accompanied by an expansion in health insurance coverage in the United States. Hospital insurance coverage reached 77 percent of the population in 1970, compared with only 57 percent in 1953. Uninsured persons, when compared with the total population, had disproportionate percentages of persons: 1) age 17 years and under; 2) below the poverty level; and 3) from families in which the head of household had completed eight years or less of education.

Out-of-pocket expenses, as a *proportion of the total health expenditures*, and as a *proportion of total personal income*, is a measure of the financial impact of health care expenditures on in-

dividuals. Out-of-pocket expenses in 1970 represented 40 percent of all *health care expenditures*. This proportion varied as a function of family income, from 32 percent for families with less than \$2000 income, to 56 percent for families with incomes of \$15,000 and over. In contrast, health care expenditures, as a *proportion of total income*, was 3.5 percent for the highest income group compared with 12.6 percent for the lowest.

Several government programs were designed with the purpose of reducing financial barriers to health care, especially those financial barriers experienced by the disadvantaged. Analysis of available data and findings of other studies were used to ascertain the effectiveness of these programs in this chapter. A comparison of Medicare payments showed that racial minorities received lower and fewer Medicare reimbursements for physician services in 1972. Medicare inpatient hospital care reimbursements per persons with a hospital episode, on the other hand, were higher for racial minorities than for whites, probably reflecting the lengthier hospital stays of nonwhites when compared to whites.

Medicare outpatient hospital care reimbursements per person enrolled and per person served were higher for racial minorities than for whites. In addition to racial disparities, income disparities were observed among Medicare enrollees. Medicare reimbursements per enrollee were twice the amount for the highest income group as they were for the lowest income group.

Disparities unfavorable to the disadvantaged were also observed in the Medicaid program. Medicaid payments to whites are 74 percent higher

than payments to racial minorities. On the average, utilization of various types of Medicaid funded services is 10 percent higher for whites compared with racial minorities, except for nursing home and intermediate care, where the utilization rate of whites is 4-1/2 to 5-1/2 times that of racial minorities.

Disparate expenditures for health care of another population group deserves mention. While the population under age 19 represented 33 percent of the population in 1976, only 15 percent of total personal health care expenditures was spent on this age group. Public funds were used to pay for 68 percent of total health expenditures for those age 65 and over, but public funds covered only 26 percent of total health expenditures for persons under age 19. While a large part of the age differential in spending reflects a lesser need for health care among the young, an argument can be made for increased public health spending for this age group, in view of a significant payoff in terms of both improved health and those cost savings associated with early care and prevention.

B. Introduction

In 1976, personal health care expenditures reached \$552 per person in the United States (1). Personal per capita health care expenditures increased 30 percent in the short period from 1974 to 1976. Determining the impact of medical care expenses of this magnitude on the population and, particularly, on the disadvantaged is of primary concern to many health professionals today. The fact that up-to-date health expense data by demographic characteristics is sadly lacking has not deterred health professionals, this writer included, from analyzing and lamenting what appears

to be the excessive financial impact of health care on the disadvantaged, as well as the rest of the population.

In view of the high cost of being ill in the United States, the financial impact of health care on segments of the population, particularly the disadvantaged, is excessive. In this chapter we seek answers to the following questions:

1. How do the per capita personal health care expenditures of the disadvantaged compare with those of the rest of the population?
2. What proportion of the health care dollar goes toward hospital care, physician care, etc., for the disadvantaged compared with the rest of the population?
3. How does health insurance coverage and the out-of-pocket costs of the disadvantaged compare with those of the rest of the population? and,
4. How has public health spending reduced those financial barriers to health care experienced by the disadvantaged?

The purpose of determining if differentials exist is to explore how they impact on the health status of the disadvantaged. Thus, what we would like to know is to what extent they are indicative of unmet health needs, suggestive of different health care preferences, or due to differentials in price. While these differences may be important, they cannot be determined without the results of a special indepth study. It is fairly safe to assume that the bulk of the differential represents unmet health needs of the disadvantaged, since the differentials which are reported below are of too great a magnitude to stem solely from preferences and price. This is, also, the federal government's assumption in its funding practices of health care for the poor.

A large part of the data in the chapter are from materials collected in the national survey conducted by the Center for Health Administration Studies

(CHAS) and the National Opinion Research Center (NORC), at the University of Chicago in 1970, under the direction of Ronald Andersen. In that survey, 3,765 families were interviewed in their homes. The inner city poor, the aged, and rural residents were over-represented, because of particular policy interest in these groups.

C. Mean Health Care Expenditures

In 1970, the mean expenditures for health services in the United States was \$248 per person (See Table 1). The mean health care expenditure of racial minorities was \$162, 37 percent lower than that of whites, \$258. Mean health care expenditures for persons from families with incomes less than \$2000 was 16 percent higher, \$302, than the mean expenditures of persons from families with an income of \$15,000 or more, \$260. However, when adjustments are made for family size, as with the near poverty index, the health care expenditures are 20 percent greater for those above the near poverty line compared with those below it. Mean expenditures per person for personal health services increase with age, from a low of \$135 for persons age zero to five to a high of \$445 for persons age 55 to 65 and a slight drop to \$428 for persons aged 65 and over.

The relationship of mean health expenditures to education of head of household is not consistent. While the highest mean health expenditures are reported in the highest educated head of households, \$295; the lowest, \$193, is reported by the next to lowest head of household education group, rather than the least educated group. Mean expenditures are highest in SMSA's outside the central city area, \$299, and lowest in rural farm areas, \$181.

Three groups of persons with the lowest mean health care expenditures, as reported by Andersen from his 1970 survey, were: 1) nonwhites whose mean health care expenditures were \$173, compared with \$259 for whites; 2) rural children with family income of less than \$6000, whose mean health expenditures were \$46, compared with \$127, for all other children; and 3)

middle income, \$6,000-10,999, people under 65 in central cities, whose mean health expenditures were \$176, compared with \$233, for all other persons under 65 (See Table 2).

Andersen's comments on these findings are applicable not only to these differences found by him, but are, also, applicable to other observed differences in expenditures among groups of persons.

"Total expenditures do not of themselves provide criteria for judging the extent of inequity in the distribution of health services. Expenditures may vary, because the price per unit of service differs by local and income group. They may vary because the level of illness is not the same in different population groups. Finally, differences in population groups' expenditures may reflect varying preferences for medical care, which are independent of factors which enable consumers to purchase health services. Nevertheless, the expenditure measures, used in the report, do provide some indication of the medical care resources devoted to various groups in this country; and it is unlikely that the magnitudes of the differences ... can be explained by price or health levels, or even differences in preferences of the groups shown. More likely they represent variations in the distribution of health resources in the country" (2, p. 39).

The increase in mean non-free health care expenditures, from 1963 to 1970, was 8 percent. While a consistent relationship between change in expenditures and income level was not observed, slight differences among income levels were observed. The lowest income group, under \$2000, had the lowest increase, 6 percent, while a middle income group, \$3500-4999, had the highest increase of 8 percent (2, p. 5).

D. Health Insurance Coverage

The proportion of the population with insurance coverage has increased over time. Only 57 percent of the population had hospital insurance in 1953, compared with 77 percent in 1970 (See

Table 3). The portion of the population with physician coverage increased from 35 percent in 1963 to 57 percent in 1970. "Much of the expansion of physician visit coverage is due to the increasing prevalence of major-medical insurance, which had covered one-fifth of the population in 1963 but two-fifths by 1970. The expansion of out-patient drug coverage in recent years is, also, largely, through major medical type coverage" (3, p. 50).

The Social Security Administration estimates that nearly four-fifths of the under 65 population had health insurance in 1973 (2). Seventy-eight percent of the population had hospital coverage. Seventy-seven percent were covered, in part, for in-hospital physician visits and X-ray and laboratory examinations. Only 35 percent of the population was covered for office and home visits; 65 percent for out-of-hospital prescription drugs, subject both to deductibles and other limitations; 33 percent for nursing-home care, and 11 percent for dental care (See Table 4).

Lower income persons are less likely to be covered by hospital and/or surgical insurance. Only 39 percent of persons in families with incomes of less than \$3,000 had hospital insurance coverage, compared with 90 percent of persons in families with incomes of \$10,000 or more (See Table 5).

The higher the educational level of the family head, the more likely family members would be covered by insurance (See Table 6). Sixty-five percent of individuals had hospital insurance in families where the head of the household had zero to eight years education compared with 87 percent coverage in families where the head of the household had 13 or more years education. Persons above the near poverty level were far more likely to be covered by insurance, 85 percent coverage, than persons below the near poverty level, 47 percent coverage. For all population subgroups and the total, the highest proportion of persons had hospital insurance, 77 percent, while lower proportions of the population had doctor visit insurance, 57 per-

cent; and major medical, 41 percent, in 1970.

Roughly, 22 percent of the civilian population under age 36 was wholly unprotected by private health insurance in 1973. "Disproportionate numbers of these were children and the poor, whose medical care may have been covered under Medicaid. Medicaid payments were made in behalf of nearly 20.9 million persons in fiscal 1973: 45.2 percent were children, and 16.8 percent were persons aged 65 and over." (4, p. 90)

In Table 7, distribution of the uninsured population are compared with the insured population and with the total population, across some selected demographic characteristics. From the Table, it can be seen that the insured population is dissimilar to the uninsured population, in many respects. While only 36 percent of the total population are age zero to 17, 44 percent of the uninsured population are age zero to 17. Twenty-three percent of the total population are below the near poverty level, but 53 percent of the uninsured population are below the near poverty level. In the total population, 26 percent of the household heads completed 15 years or more education, while in the uninsured population, only 14 percent of household heads completed 15 years or more education.

E. Out-of-Pocket Expenses

The total amount of money spent on health care is probably not as important to the individual as the proportion of total income, represented by that amount. Those health costs paid directly by the consumer for health services, as well as those paid by the consumer for insurance premiums, are referred to as out-of-pocket expenses. Forty-four percent of all health expenditures in 1970 were out-of-pocket costs. Among higher income persons, a higher percentage, between 50 and 56 percent, of total personal health expenditures represent out-of-pocket expenses; while among lower income persons, only 32 percent represents out-of-pocket expenses. Also, for the

lower income persons, a higher percentage of total personal health expenditures are paid for by welfare, free institutions, Medicaid, and Medicare (See Table 1).

Out-of-pocket expenditures for white persons, \$116, were twice those of racial minorities, \$53. Out-of-pocket expenditures were greater for persons above the near poverty level compared with those below the near poverty level, by 70 percent (See Table 8).

Not only were mean health care expenditures higher for the the lowest income group compared with the highest income groups, in 1970, \$302 and \$231, respectively, as shown in Tables 1 and 8, but they, obviously, also, represent a higher proportion of total income of low income persons. While the proportion of total income spent on personal health services was 3.5 percent for the highest family income group, it was 12.6 percent of total income for the lowest income group (See Table 9). "Some of this disparity was probably due to the larger proportion of persons over age 65 in the lower income category. Increased public funds for health care lowered the proportion of family income spent on health by 3.1 percentage points, from 1963 to 1970, for families with incomes less than \$2000, but did not have any effect on other income levels" (3, p. 46).

F. Public Health Spending—The Aged

"Title XVIII of the 1965 Social Security Amendments, (P.L. 89-97), authorized a federal program of health insurance for the aged known as Medicare. The explicit goal of Medicare was to reduce the financial barrier to access to health care for those age 65 and over, aiding them in reaching needed services" (4, p. 146). p. 146).

"Since 1966, the private portion of health-care over-costs met by out-of-pocket payments, private health insurance, philanthropy, and industry has been cut in half: from 70 percent in 1966 to 34 percent in 1972 (6). Out-of-pocket payments made by the

elderly declined sharply as a proportion of their personal health-care costs, from 53.2 percent in 1966 to 26.4 percent in 1968 and a low of 25.5 percent by 1969" (5, pp. 155-156).

Has Medicare been effective in reducing the financial impact of health care for the poor and for racial minorities who are aged? From available data which relates reimbursement to race, it appears that racial minorities received both lower and fewer Medicare reimbursements for physician services than whites in 1972 (See Figure 1). Of all Medicare enrollees with claims, the average reimbursement to whites was \$219.70 compared with \$187.34 to racial minorities. Considering total number of enrollees, both those who used and did not use services, the average reimbursement for whites was almost 60 percent more than that of racial minorities, \$102.09 compared with \$64.71. These data indicate that fewer racial minorities eligible for Medicare use health services, and of those who do, their expenditures are, on the average, lower than that of whites.

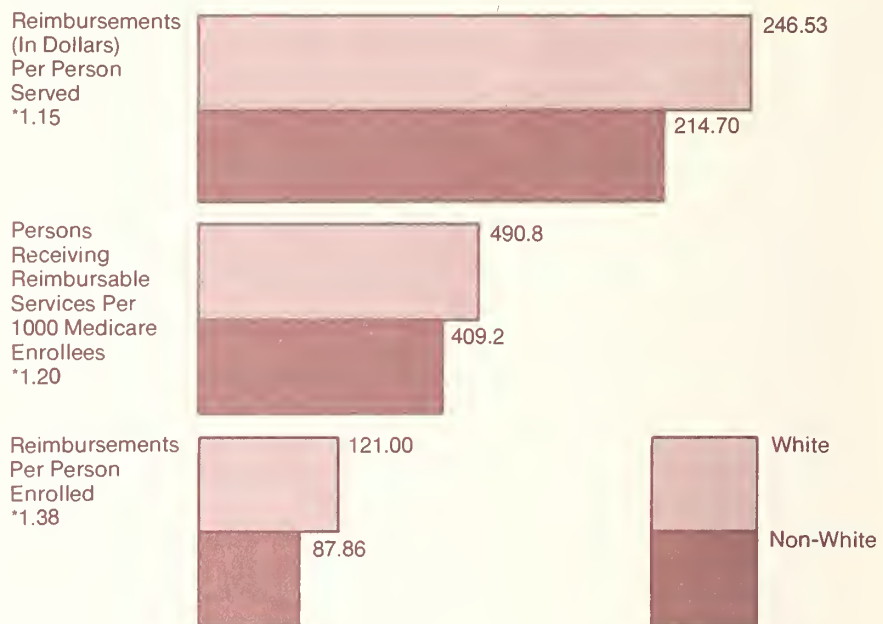
Compared with Medicare reimbursements for inpatient hospital care, a slightly different pattern for reimbursements for physician care is observed. The average reimbursement in 1972 to white enrollees for inpatient hospital care was \$277.70, 21 percent higher than the average reimbursement to racial minority enrollees which was \$229.98 for such care (See Figure 2). The average reimbursement to white persons *served* was \$1,281.17, 7 percent *lower* than the average reimbursement to racial minorities *served*, which was \$1,383.16. To summarize the transactions, the following are listed: 1) considering total enrolled persons, a larger proportion of whites receive reimbursable inpatient hospital services than do racial minorities; 2) the average reimbursement per person enrolled for hospital care is greater for whites than for racial minorities; and 3) the average reimbursement per person serviced is lower for whites than for racial minorities. The lower reimbursement

Medicare Payments—Physician Services

Medicare Reimbursement for Physician Services by Race, 1974

Figure 1.

*Ratio-White/Racial Minority



Source: Health Care Financing Administration
Health Insurance, 1974: Summary

rate of whites among those served is probably explained by the shorter average lengths of hospital stay of whites compared to racial minorities.

Medicare reimbursements to racial minorities, for hospital outpatient services in 1972, followed a pattern strikingly different from total reimbursement (See Figure 3). A larger number of racial minority persons per 1000 enrollees, 139.1, received reimbursable services compared with whites, 118.6. The Medicare reimbursement per person enrolled was 65 percent higher for racial minorities, \$10.69, compared to whites, \$6.92. Of those who received services, racial minority reimbursements of \$78.63 were, again, higher by 75 percent than reimbursements made for whites, which amounted to \$58.38. That the average reimbursement of racial minorities served is higher than that of whites suggests not only greater outpa-

tient department utilization by whites, but a different mode of utilization. It would appear that a different mixture, or intensity, of services is utilized by racial minorities than by whites in hospital outpatient departments. If the higher outpatient charge to racial minorities means more services per visit, then the racial differentials in outpatient department utilization follows that of inpatient utilization. That is, racial minorities may receive more services per visit to outpatient departments, just as they have more days per inpatient hospital stay when compared with whites.

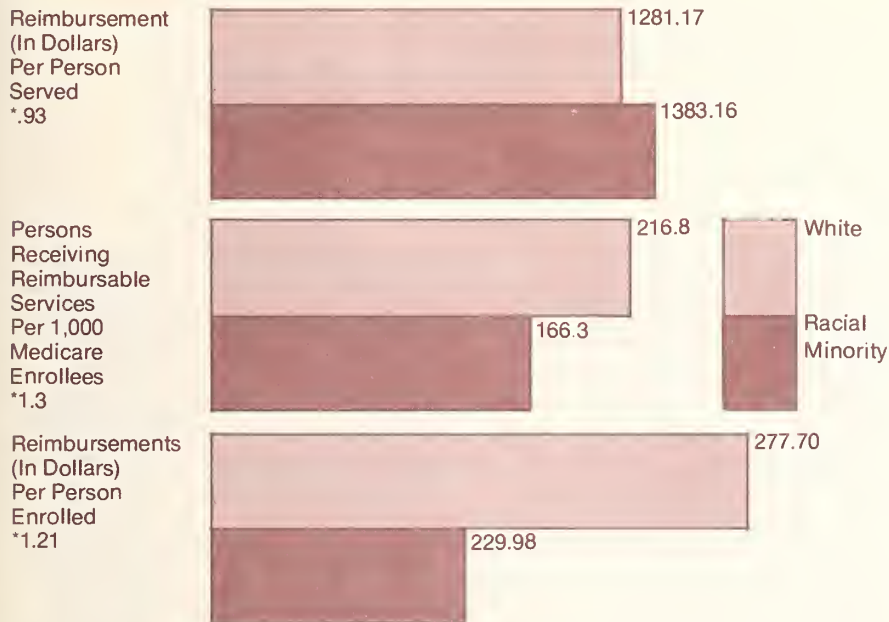
In Figure 4 are presented racial differentials of reimbursements for extended care, for physician care, and for inpatient and outpatient hospital care, by geographical region in 1969. White reimbursements per person enrolled exceed those of racial minorities, mostly in the area of ex-

Medicare Payments – Inpatient Services

Medicare Reimbursements for Inpatient Services, by Race, 1972.

Figure 2.

*Ratio-White/Racial Minority

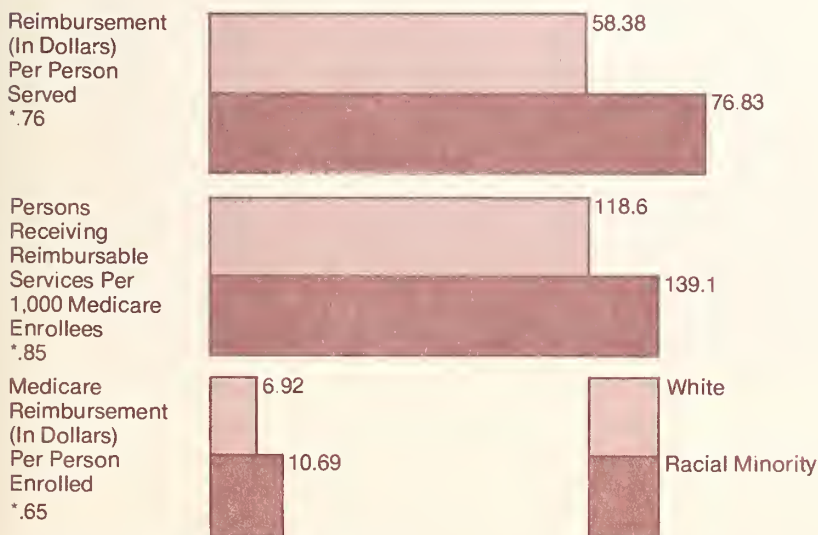


Source: U. S. D.H.E.W., Social Security Administration, Office of Research and Statistics, Unpublished Data.

Medicare Payments – Outpatient Services

Medicare Reimbursements for Hospital Outpatient Services, by Race, 1972

Figure 3.



Source: U. S. D.H.E.W., Social Security Administration, Office of Research Statistics, Unpublished Data.

tended care. The reimbursement rate for whites per enrollee is twice that of racial minorities. The racial differential is, also, large for reimbursements to physicians, 1.58, and lower for inpatient hospital care, 1.16. Reimbursements for outpatient care are lower among whites, as previously mentioned, with a racial differential of 0.67. Racial differentials of reimbursements for each type of care were greatest in the South.

In addition to racial disparities, marked disparities in Medicare reimbursements among income groups were observed. Data on Medicare supplementary medical insurance services, which include physician services, hospital outpatient services, and home health services are presented by income in Table 10. In 1968, medical reimbursements of \$160, per person enrolled in the highest group, were twice the amount of \$76, paid to the lowest income group.

High income persons appeared to reap greater benefits from Medicare for most reimbursement measures in 1968. First, the number of highest income persons, who received reimbursable services per 1000 Medicare enrollees, 552.3, was 26 percent higher than the number of lowest income persons, 438.2. Second, the amount of Medicare reimbursement per services was higher for high income persons, \$10.40, compared with low income persons, \$6.06. Third, Medicare reimbursements per enrolled person were twice as high for the highest income group than for the lowest income group: \$160 compared with \$76.

G. Public Health Spending—The Poor

"Title XIX of the 1965 Social Security Act amendments, (P.L. 89-97), authorized establishment of a jointly funded and administered federal-state program of medical assistance known as Medicaid. The program was designed to reduce financial barriers to access to health care for low-income and medically needy persons by subsidizing their use of services with direct payments to the providers. . . ." (5, p. 168).

"As described in the legislation, Medicaid was to furnish medical assistance on behalf of families with dependent children, and of aged, blind or permanently and totally disabled individuals whose income and resources are insufficient to meet the costs of necessary medical services, and rehabilitation and other services to help families and individuals attain or retain capability for independence" (7, p. 343).

Has Medicaid been effective in reducing the financial impact of health care expenditures among the disadvantages? The discussion in this section draws on data pertaining only to persons enrolled in the program, and, therefore, identifies only endogenous inequities. Quick mention is made, however, to exogenous inequities which stem directly from the program. For instance, inequities exist which are associated with eligibility for Medicaid.

"The poor and working poor suffer obvious financial and non-financial barriers to the use of health care facilities; they experience more illness and have less access to acceptable primary care services. Fairness in the financing system is a particular problem in relation to families with low income. Because of inequities in the Medicaid system, the working poor are often required to bear the full cost of health care, while families on welfare, with almost identical incomes, appear to receive substantial governmental assistance in meeting these expenses." (8, p. 189.)

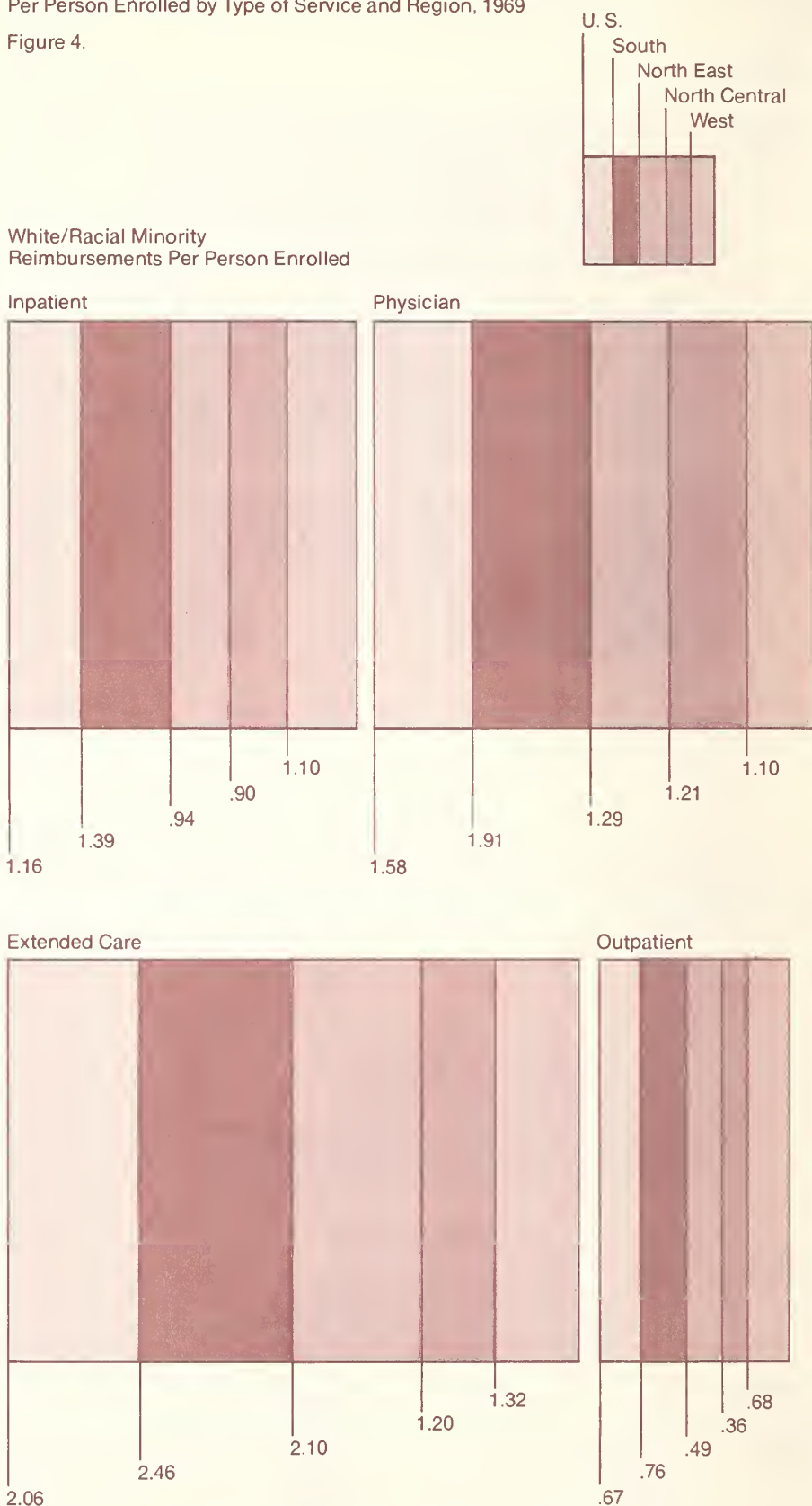
In 1969, average Medicaid payments per white recipient was \$375, compared with \$213 for racial minorities (See Table 11 and Figure 5). In 1974 average Medicaid payments for white recipients increased 49 percent to \$560 and for racial minorities, 51 percent to \$321. Because of the slightly larger increase in payments to racial minorities, the racial differential decreased in 1974 by 2 percent, but Medicaid payments were still 74 percent greater for whites than for racial minorities.

"Because of the limitations of the data,

Medicare Payments—Race and Region

Ratio of White to Racial Minority Medicare Reimbursements Per Person Enrolled by Type of Service and Region, 1969

Figure 4.

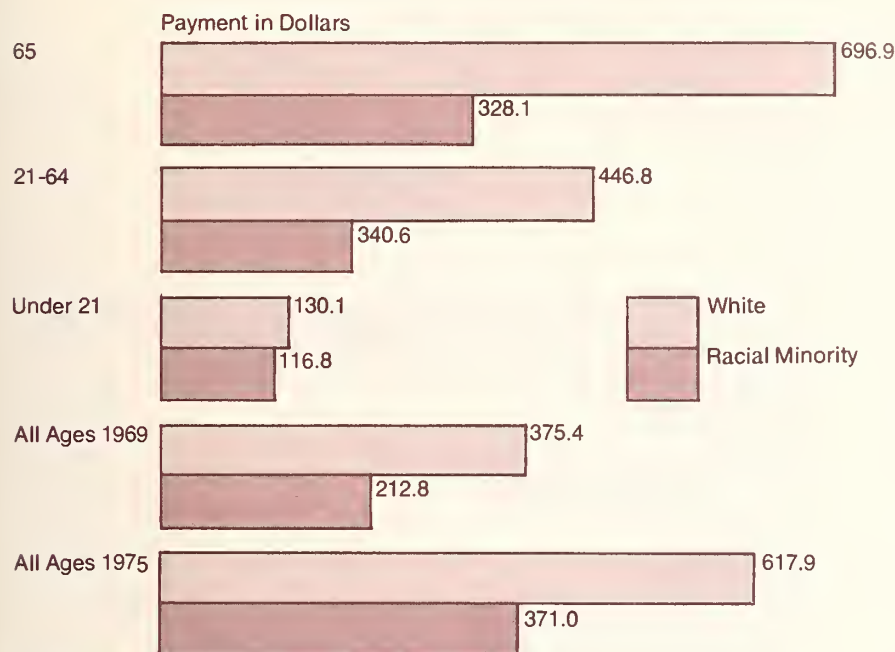


Source: Calculated from U. S. D.H.E.W., Social Security Administration, No. SSA-75-11704. Medicare, 1969. Section I: Summary.

Medicaid Payments

Medicaid Payments Per Recipient, by Race and Age, 1969, (by Race Only, 1975)

Figure 5.



Source: Calculated From Unpublished State Medicaid Reports, U. S. D.H.E.W., National Center for Social Statistics

evidence from additional sources should be examined before drawing any definitive conclusions about the distribution of Medicaid benefits by race. The pattern observed in the Medicaid program, however, underscores a similar distribution of benefits by race in the Medicare program, and may well be indicative of racial barriers to care for poor persons, as well as elderly persons" (6, p. 172).

The major data limitations referred to above are: (a) only 24 states reported data by race in 1969; and (b) the data available apply only to *recipients* of any Medicaid services and not to all *eligible* Medicaid persons.

When the number of persons receiving health services under Medicaid are categorized by type of medical service, the percent differences for most services is 10 percent greater for whites than racial minorities, on the average (See Figure 6). The largest differences occur in nursing home and intermediate care services. Whites used nursing

homes at a rate four and a half times that of racial minorities, and intermediate care services at a rate five and a half times that of racial minorities. It was noted in the chapter on Utilization that racial minorities are under-represented in nursing homes.

H. Public Health Spending—The Young

A brief assessment of programs that were designed to reduce inequities in access to health care, primarily by reducing financial barriers, is presented in Table 12. The Medicare and Medicaid programs were discussed in the two previous sections. Experience with HMO's is too recent and limited to allow evaluation. Regarding the two other programs included in Table 12, Rashi Fein, while acclaiming the effectiveness of both programs, had this to say: "It should be clear . . . that neighborhood health centers and children and youth programs cannot, in and of themselves, be viewed as solutions to the access problem for all

Americans. Their costs are high, and they carry the risk of potential development of a dual system of medical care" (5, p. 257).

Total personal health care expenditures in 1976 were \$120.4 billion of which only 14.9 percent was spent on persons under 19 years of age, who make up 32.9 percent of the total population (10). The distribution of health care expenditures, by age, has remained relatively constant over the past several years. In 1973 a slightly higher proportion, 15.2 percent, was spent for the under 19 age group; a slightly lower proportion was spent on those in the age range from 19-64; and a higher proportion was spent on persons age 65 and over, than was spent in 1976 (11). In 1973, public sources covered only 60 percent of the total health expenditures for those aged 65 and over, and 29 percent of the total expenditures for those under 19 years of age (11). In 1976 public sources of funds covered only 26 percent of total health expenditures for those under age 19, however, and 68 percent for those age 65 and over (10).

While *all* children may not require additional health care, some groups which do have been identified. Andersen found differences in health expenditures from free sources among children subgroups. Free care is defined by Andersen as care received by individuals at substantially reduced or at no cost. While care covered by any type of health insurance plan is *not* included, Medicaid and welfare payments are considered free care. Andersen reported these findings regarding differences in health spending among children.

"Among all children, those from low income families living in urban areas, particularly inner city areas, have the highest expenditures: (\$76) paid for them by free care sources. . . . Free sources pay relatively small amounts for children of high income families living outside of the inner cities and in rural areas, while non-free payments tend to be highest for the same children. Non-free payments tend to be highest for upper income children

and middle income children living in other urban and rural areas. The results indicate a wide range of expenditures related to income and areas of residence, with children from rural poor families receiving virtually no "free" care, (\$5 compared to \$76 for central city poor children). Poor rural children have the lowest medical care expenditure from any source (\$46), while upper income children classified as being in "other urban" areas have the highest, (\$130). Clearly children from low income families living in rural areas receive very little benefit in the form of "free" medical care as defined in this study, and other sources do not make up the deficit" (2, p. 20).

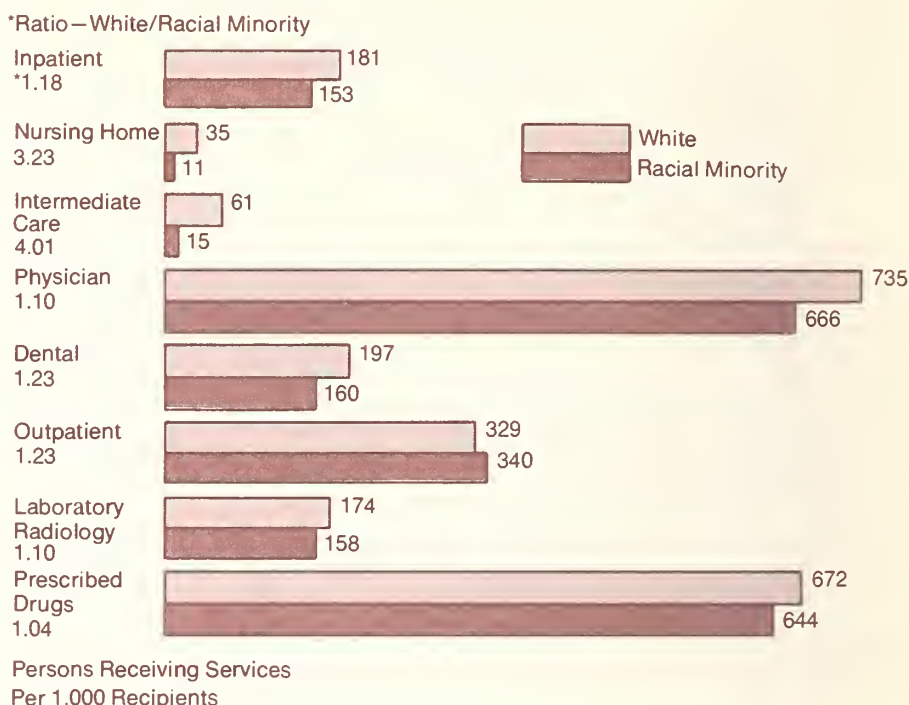
Most of the age disparity in health care expenditures, obviously, reflects the more frequent and costlier illness patterns of the aged. What part of the health spending inequities for children represents unmet health care needs among children is difficult to determine. The age differential in health care spending is mentioned here, because it exists. The significance of the differential cannot at this time be determined. Just as no determination was made of the effect on health of racial and income level inequities in health spending, no determination will be made of the effect of this age disparity in this brief treatment of the subject.

In view of the possibility of substantial payoffs, in terms of improved health status and the cost savings which are associated with early care and preventive care, particularly among the young, a strong argument can be made for increased health spending in this area.

Medicaid Recipients by Service

Persons Receiving Services per 1,000 Medicaid Recipients
by Type of Service and Race, 1975

Figure 6.



Source: Calculated from Unpublished State Medicaid Reports,
U. S. D.H.E.W., National Center for Social Statistics.

Table 1

Mean Expenditures for Personal Health Services and Percent of Expenditure by Source of Payment and Selected Characteristics: 1970

Characteristic	Mean Expen- diture in dollars	Percent of Expenditure From: ^a			
		Medicaid, Welfare, free insti- tutions	Medicare	Voluntary Insurance	Out-of- Pocket
Age:					
0-5	\$105	11%	...	37%	51%
6-17	96	11	...	26	61
18-34	246	9	...	36	48
35-54	236	8	...	35	51
55-64	376	6	...	45	46
65 and over	428	6	48%	7	36
Family Income:					
Under \$2,000	302	29	28	8	32
\$2,000-\$3,499	259	24	24	11	35
\$3,500-\$4,999	256	12	11	29	43
\$5,000-\$7,499	255	9	12	33	41
\$7,500-\$9,999	186	5	3	39	48
\$10,000-\$14,999	208	3	5	36	50
\$15,000 and over	231	2	2	37	56
Poverty Level: ^b					
Below near poverty	213	26	20	16	33
Above near poverty	256	9	6	34	47
Residence:					
SMSA, central city	235	13	9	31	42
SMSA, other	299	6	7	34	48
Urban, non-SMSA	190	8	9	30	49
Rural, non-farm	199	6	9	35	46
Rural, farm	181	6	16	24	48
Total	\$248	13%	8%	31%	44%

^aPercentages do not add to 100 because certain sources of expenditure were excluded from the source tabulation.

^bPoverty level is an income measure that adjusts for family size and was determined using Bureau of Labor Statistics data. For example, a family of four was considered to be at the near poverty level or below, if they reported their annual income to be less than \$5700.

Source: Andersen, R. Final Report, Contract No. HSM-110-70-392, National Survey Trends in Health Service Utilization and Expenditures as a Basis for Social Policy Formulation, 1975.

Table 2

Comparison of those with lowest mean health care expenditures with other groups in the population: 1970

Low expenditure group	Type of Service				
	Hospital	Physician	Dental	Drugs	All Services
Non-whites (Whites)	\$86 (\$111)	\$37 (\$65)	\$15 (\$30)	\$24 (\$33)	\$173 (\$259)
Rural children with family income of less than \$6,000 (Other Children)	\$10 (\$47)	\$16 (\$36)	\$6 (\$23)	\$9 (\$13)	\$46 (\$127)
Middle Income (\$6,000-10,999) people under 65 in central cities (Others under 65)	\$64 (\$99)	\$53 (\$58)	\$24 (\$30)	\$20 (\$28)	\$176 (\$233)

Source: U.S. DHEW, Public Health Services, Health Resources Administration: Expenditures for Personal Health Services: National Trends and Variations, 1953-1970. (Andersen, R., Kravits, J., Anderson, O.W., Daley, J., University of Chicago) DHEW Pub. No. (HRA) 74-3105 National Center for Health Services Research and Development, Rockville, Maryland 1972. pg. 39.

Table 3

Percent of Individuals with Health Insurance by Type of Coverage

Type of Coverage	Percent Covered			
	1953	1958	1963	1970
Hospital	57%	65%	68%	77%
Surgical-medical	48	61	66	74
Outpatient doctor visit ^a	b	b	35	57
Major medical	b	b	22	41
Outpatient drug ^c	b	b	26	46
Dental	b	b	2 ^d	11

^aIncludes first dollar doctor visit coverage as written by prepaid group practice plans, unions, and certain other insurers, all major medical policies whether or not connected with a base plan, and Medicare, Part B. First dollar doctor visit coverage, excluding major medical policies and Medicare, Part B, both of which have a deductible, is estimated at 11 percent of the population for 1970.

^bNot available.

^cIncludes first dollar drug coverage as written by some prepaid group practices, unions, and certain other insurers, and major medical policies. First dollar drug coverage excluding major medical policies is estimated at 5 percent of the population for 1970.

^dFrom *Statistical Abstract of the United States, 1971, Table 706*.

Source: Andersen, R. Final Report, Contract No. HSM-110-70-392, National Survey Trends in Health Service Utilization and Expenditures as a Basis for Social Policy Formulation, 1975.

Table 4

Type of Health Insurance Coverage, Population under age 65, 1973

Type of care	Population under age 65			
	With coverage		Without coverage	
	Number (in millions)	Per-cent	Number (in millions)	Per-cent
Hospital care	146.1	78.0	41.3	22.0
Surgical services	145.4	77.6	41.9	22.4
In-hospital visits	144.6	77.2	42.8	22.8
X-ray and lab exams	144.0	76.9	43.4	23.1
Office and home visits	65.9	35.2	121.5	64.8
Dental care	21.4	11.4	166.0	88.6
Prescription drugs	121.0	64.6	66.4	35.4
Nursing-home care	62.6	33.4	124.7	66.6
Private duty nursing	115.2	61.5	72.2	38.5
Visiting nurse service	117.9	62.9	69.5	37.1

Source: Marjorie Smith Mueller, "Private Health Insurance in 1973: A Review of Coverage, Enrollment, and Financial Experience," *Social Security Bulletin*, Feb. 1975.

Table 5

Health Insurance Coverage by income level, Population under age 65, 1970

Income level	Percent of population under age 65 with—	
	Hospital insurance	Surgical insurance
Under \$3,000	39.3	36.7
\$3,000-4,999	53.1	50.2
\$5,000-6,999	74.5	71.8
\$7,000-9,999	84.3	81.9
\$10,000 or more	90.1	88.3

Source: "Hospital and Surgical Coverage Among Persons Under 65 Years of Age in the United States, 1970," *Monthly Vital Statistics Report*, U.S. Department of Health, Education, and Welfare, National Center for Health Statistics.

Table 6

Percent of Individuals with Selected Types of Coverage by Selected Characteristics:
Calendar Year 1970

Characteristic	Percent of Individuals With:		
	Hospital Insurance	Doctor Visit Insurance	Major Medical
Age			
0-5	69%	51%	44%
6-17	73	53	44
18-34	72	53	45
35-54	80	60	51
55-64	75	48	35
65 and over	97	85	5
Sex			
Male	76	57	42
Female	77	56	40
Poverty Level ^a			
Above near poverty	85	64	49
Below near poverty	47	33	14
Education of Head			
0-8 years	65	43	21
9-11 years	73	51	37
12 years	80	60	45
13 or more years	87	70	58
Residence			
SMSA, central city	71	49	34
SMSA, other	82	64	45
Other, urban	76	56	40
Rural, non-farm	80	60	47
Rural, farm	66	48	33
Total	77	57	41

^aSee Table 1, footnote b.

Source: Andersen, R. Final Report, Contract No. HSM-110-70-392, National Survey Trends in Health Service Utilization and Expenditures as a Basis for Social Policy Formulation, 1975.

Table 7

Selected Characteristics of the Population Uninsured for Hospital Coverage: 1970

Characteristics	Distrubution by Demographic Characteristics		
	Of the uninsured population	Of the insured ^a population	Of the total population
Age			
0-5	14%	9%	10%
6-17	30	24	26
18-34	26	22	23
35-54	19	23	22
55-64	10	9	9
65 and over	1	13	10
Sex			
Male	50	49	49
Female	50	51	51
Poverty Level			
Above near poverty	47	86	77
Below near poverty	53	14	23
Education of head			
0-8 years	36	20	24
9-11 years	23	19	20
12 years	25	30	29
15 years or more	14	30	26
Residence			
SMSA, central city	37	28	30
SMSA, other	21	29	27
Other urban	12	12	12
Rural non farm	20	26	24
Rural farm	10	6	7
Total	100%	100%	100%

^aIncludes Medicare and CHAMPUS.

Source: Andersen, R. Final Report, Contract No. HSM-110-70-392, National Survey Trends in Health Service Utilization and Expenditures as a Basis for Social Policy Formulation, 1975.

Table 8

Best estimate expenditures for all personal health services by selected characteristics and source of payment: 1970

Characteristic	Source of Payment						Total Mean Expenditures per Person
	Medicaid, welfare, free institution	Other free care	Medicare	Voluntary insurance	Out-of-pocket	Other nonfree care	
Sex							
Male	\$ 36	\$ 14	\$ 19	\$ 66	\$ 98	\$1	\$ 234
Female	26	2	22	85	119	4	258
Age							
0-5	12	"	—	69	54	1	135
6-17	14	2	—	31	63	1	110
18-34	74	10	—	88	117	8	296
35-54	20	13	—	82	121	"	236
55-64	23	10	"	211	197	4	445
65 and over	26	13	204	32	153	"	428
Poverty level							
Above near poverty	23	8	14	88	120	3	256
Below near poverty	57	8	42	34	70	2	213
Family income							
Under \$2,000	88	9	83	23	98	1	302
\$2,000-3,499	63	13	63	28	90	2	259
3,500-4,999	32	9	29	73	111	1	256
5,000-7,499	23	12	30	83	105	2	255
7,500-9,999	10	8	5	74	89	2	186
10,000-14,999	50	7	11	75	104	5	252
15,000 and over	5	4	6	103	140	2	260
Race							
White	29	8	21	81	116	3	258
Racial Minority	45	8	15	40	53	2	162
Education of Head							
8 years or less	32	11	42	52	96	1	234
9-11 years	22	4	20	55	89	2	193
12 years	56	5	14	75	98	2	249
13 years or more	9	11	9	116	146	5	295
Residence							
SMSA, central city	30	11	21	73	99	1	235
SMSA, other	61	8	22	101	145	5	342
Urban, non-SMSA	16	5	17	57	94	2	190
Rural, nonfarm	12	5	18	70	93	2	199
Rural, farm	11	9	29	44	86	2	181
Total	\$ 31	\$ 8	\$ 21	\$ 76	\$ 109	\$3	\$ 248

" Less than 50¢

Source: Reprinted with permission from "Two Decades of Health Services" by Ronald Andersen, Odin Anderson, and Joanna Lion. Copyright 1976 Ballinger Publishing Company. Table II-9, p. 248-9

Table 9

Aggregate Family Outlay for Personal Health Services as a Percent of Family Income, by Income Group, 1963 and 1970

Family Income	Aggregate Outlay as a Percent of Family Income			
	1953	1958	1963	1970
Total	4.8%	5.5%	5.0%	4.2%
Under \$2,000	11.8	13.0	15.7	12.6
2,000-3,499	6.1	8.4	8.5	9.0
3,500-4,999	5.4	6.4	6.8	7.3
5,000-7,499	4.7	5.4	5.6	5.7
7,500 and over	3.0	3.9	3.8	3.5

Source: Andersen, R. Final Report, Contract No. HSM-110-70-392, National Survey Trends in Health Service Utilization and Expenditures as a Basis for Social Policy Formulation, 1975.

Table 10

Medicare Reimbursements for Covered Services Under the Supplementary Medical Insurance Program and Persons Served, by Income, 1968

	Supplementary medical insurance services						Ratio, highest income to lowest income
	Total	Under \$2,000	\$2,000-4,999	\$5,000-9,999	\$10,000-14,999	\$15,000 and over	
Persons receiving reimbursable services per 1000 Medicare enrollees	460.1	438.2	425.9	475.0	527.2	552.3	1.26
Number of reimbursable services per person receiving reimbursable services	26.6	28.7	23.4	26.6	27.5	27.9	.97
Medicare reimbursement per reimbursable service	\$7.27	\$6.06	\$8.11	\$8.21	\$7.95	\$10.40	1.72
Medicare reimbursement per person enrolled	\$88.60	\$76.32	\$80.95	\$103.87	\$115.10	\$160.30	2.10

¹Including unknown income.

Source: (1) U.S. Department of Health, Education and Welfare, Social Security Administration, Office of Research and Statistics, calculated from unpublished tabulations from the 1968 Current Medical Survey. (2) Davis, K., Financing Medical Care: Implications for Access to Primary Care. In Spyros Andreopoulos (ed), Primary Care: Where Medicine Fails. John Wiley and Sons, New York, 1974.

Table 11

Medicaid Payments for All Medical Services per Recipient, by Race, Age, Region, and Residence, 1969

	All ages		Under 21		21-64		65 and Over	
	White	Other Races	White	Other Races	White	Other Races	White	Other Races
All areas	\$375.44	\$212.85	\$130.10	\$116.80	\$446.77	\$340.63	\$696.09	\$328.08
Region								
Northeast	361.87	204.73	131.72	120.25	421.21	303.26	981.88	400.98
North Central	448.52	249.46	135.48	121.52	575.85	441.68	730.51	452.90
South	322.39	180.18	116.82	102.03	387.42	289.12	412.85	208.62
Mountain	302.59	213.12	100.27	116.94	383.53	361.79	586.70	416.51
Residence								
City, 400,000 or more population	332.80	221.34	122.20	125.54	381.38	354.97	763.33	399.99
Other SMSA	425.96	227.54	141.44	113.60	531.78	376.13	678.50	351.31
Non-SMSA	406.10	178.57	135.95	86.11	524.97	274.95	660.26	232.55

¹Based on data from 24 states with Medicaid programs in 1969 and reporting data by race.

Source: Calculated from unpublished State Medicaid reports, U.S. Department of Health, Education and Welfare, National Center for Social Statistics.

Davis, K., Financing Medical Care: Implications for Access to Primary Care. In Spyros Andreopoulos (ed), Primary Care: Where Medicine Fails, John Wiley and Sons, New York, 1974.

Table 12

Evaluation of Selected Government Programs

	Medicare	Medicaid	Neighborhood Health Centers	Children and Youth Projects	Health Maintenance Organizations
Intervention	Reduced financial barriers for aged	Reduced financial barriers for welfare recipients and medically needy	Reduce financial, geographic, organizational, psychosocial barriers Increase availability of services	Reduce financial, geographic, organizational, psychosocial barriers Increase availability of services	Predictable costs (prepaid) for organized services at fixed locations
Costs	FY 1967 = $\$3.4 \times 10^9$; FY 1973 (est.) = $\$9.5 \times 10^9$ Out-of-pocket expenses of those 65 and over: 1966 \$238 1968 \$165 1972 \$276	Pre Title XIX costs for assistance = $\$1.2 \times 10^9$ FY 1973 (49 programs) = $\$8.9 \times 10^9$	$\$1.08-7.33 \times 10^6$ per center \$72-\$400/Registrant (Data incomplete)	FY 1968: \$200/child FY 1972: \$135/child	FY 1971-FY 1974: $\$31.4 \times 10^6$ in federal funds for technical assistance and start-up funds; no support for operating expenses No good data on average start-up and operating costs
Secondary effects	Exposed limits of supply Inflated costs Benefits not equitably distributed among those covered	Exposed limits of supply Inflated costs Benefits not equitably distributed among those covered	—	—	Potential development of intraorganizational barriers
Impact on access to primary care	Yes, <i>positive</i> but decreasing with additional barriers of 1970s	Yes, <i>positive</i> but very wide variations in value of benefits and unequitable distribution	Very effective but costs are very high	Very effective on small proportion of target population Moderate costs	? Too early to determine

Source: Lewis, C.E., Fein, R., and Mechanic D.: A Right to Health. The Problem of Access to Primary Medical Care. John Wiley and Sons, New York, 1976.

References

1. Gibson, R. M. and Mueller, M. S.: National Health Expenditures, Fiscal Year 1976. Social Security Bulletin 40: 3-22, April 1977.
2. U.S. DHEW, Public Health Services, Health Resources Administration: Expenditures for Personal Health Services: National Trends and Variations, 1953-1970. (Andersen, R., Kravits, J., Anderson, O. W., Daley, J., University of Chicago) DHEW Pub. No. (HRA) 74-3105 National Center for Health Services Research and Development, Rockville, Maryland 1972.
3. U.S. Public Health Service, Health Resources Administration, Health: United States, 1975. DHEW Pub. No. 76-1232, U.S. Government Printing Office, 1976.
4. HEW, Social Security Administration, Office of Research and Statistics: Medical Care Expenditures, Prices, and Costs: Background Book, DHEW Publication No. (SSA) 75-11909. U.S. Government Printing Office, Washington, D.C., 1975.
5. Lewis, C. E., Fein, R., and Mechanic D.: A Right to Health. The Problem of Access to Primary Medical Care. John Wiley and Sons, New York, 1976.
6. Davis, K. and Reynolds, R.: Medicare and the Utilization of Health Care Services by the Elderly. Washington, D.C.: The Brookings Institution, December 1973 unpublished, p. 4.
7. U.S. Congress, U.S. Statutes at Large, Volume 79, 89th Congress, 1st Session. Washington, D.C.: Government Printing Office, 1966.
8. Nimetz, Matthew. Primary Care as a Part of the Personal Health Care System, Report of a Symposium, *In Primary Care: Where Medicine Fails*. edited by Spyros Andreopoulos, John Wiley and Sons, New York, 1974.
9. Davis, K., Financing Medical Care: Implications for Access to Primary Care, *In Primary Care: Where Medicine Fails*. edited by Spyros Andreopoulos, John Wiley and Sons, New York, 1974.
10. Gibson, Robert M., Mueller, Marjorie Smith, and Fisher, Charles, R.: Age Differences in Health Care Spending, Fiscal Year 1976. Social Security Bulletin 40: 3-14, August 1977.
11. Mueller, Marjorie Smith and Gibson, R. M.: Age Differences in Health Care Spending, Fiscal Year 1974. Social Security Bulletin 38: 3-16, June 1975.

List of Tables

- Table 1** Mean Expenditures for Personal Health Services and percent of Expenditure by Source of Payment and Selected Characteristics 265
- Table 2** Comparison of those with lowest mean health care expenditures with other groups in the population: 1970 266
- Table 3** Percent of Individuals with Health Insurance by Type of Coverage 266
- Table 4** Type of Health Insurance Coverage, Population under age 65, 1973 267
- Table 5** Health Insurance Coverage by income level, Population under age 65, 1970 267
- Table 6** Percent of Individuals with Selected Types of Coverage by Selected Characteristics: Calendar Year 1970 268
- Table 7** Selected Characteristics of the Population Uninsured for Hospital Coverage: 1970 269
- Table 8** Best estimate expenditures for all personal health services by selected characteristics and source of payment: 1970 270
- Table 9** Aggregate Family Outlay for Personal Health Services as a Percent of Family Income, by Income Group, 1968 and 1970 271
- Table 10** Medicare Reimbursements for Covered Services Under the Supplementary Medical Insurance Program and Persons Served by Income, 1968 271
- Table 11** Medicaid Payments for all Medical Services per Recipient, by Race, Age, Region, and Residence, 1969 272
- Table 12** Evaluation of Selected Government Programs 273

List of Figures

- Figure 1** Medicare Reimbursement for Physician Services by Race, 1972 260
- Figure 2** Medicare Reimbursements for Inpatient Services, by Race, 1972 261
- Figure 3** Medicare Reimbursements for Hospital Outpatient Services, By Race, 1972 261
- Figure 4** Ratio of White to Racial Minority Medicare Reimbursements Per Person Enrolled by Type of Service and Region, 1969 262
- Figure 5** Medicaid Payments Per Recipient, by Age and Race, 1969 (By Race only, 1974) 263
- Figure 6** Persons Receiving Services Per 1,000 Medicaid Recipients by Type of Service and Race, 1974 264







U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Health Resources Administration
Office of Health Resources Opportunity

DHEW Publication No. (HRA) 79-627